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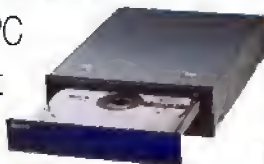


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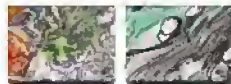
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Contents

March 2009

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REGULARS

- 7 Editorial
- 159 Competition
- 160 Contact us & PCW on the web
- 161 In the next issue
- 162 Flashback

INTERACTIVE

- 20 Letters
- 25 Gordon Laing – Inside information
- 26 Barry Fox – Straight talking
- 28 Guy Kewney – Kewney @ large

NEWS

- 8 Windows 7 lifts CES gloom
- 9 End of the line for adapters?
- 10 High-def 3D TV 'not far off'
- 13 Neo fills thin portables gap
- 14 Virgin starts 50Mbit rollout
- 15 Home data standard mooted
- 17 Police can hack into your PC
- 18 Zune leaps into Y2K trouble
- 19 Get Flashy with tech manuals

GROUP TESTS

89 Video-editing software

We review six of the best tools for making stunning movies – from only £53

100 Blu-ray burners

Bring your PC into the 21st century for less than £150

131 Great free software

Powerful but simple disk protection; an easy way to ensure your PC privacy is upheld; all you need to burn CDs and DVDs; keep up to three PCs protected against viruses; backup and restore data



COVER FEATURE

31 RESCUE YOUR FILES

How to easily recover all your deleted documents from hard disks, CDs, DVDs & memory cards



FEATURES

31 Rescue your files

Recover all your deleted documents

40 Netbook know-how

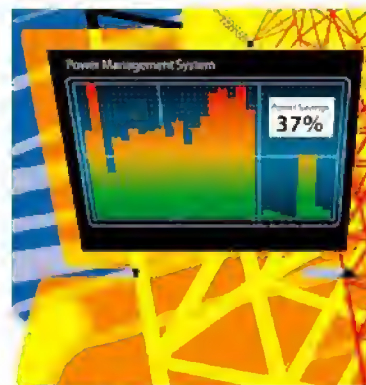
Find the best upgrades and add-ons

45 Windows 7 preview

A sneak peek at the next version of Microsoft's operating system

51 Better battery life

Inside Windows power management



Make effective use of your PC's power management features

GROUP TEST

89 VIDEO-EDITING SOFTWARE

Six of the best tools for making stunning movies, from only £53



GROUP TEST

100 BLU-RAY BURNERS

Bring your PC into the 21st century for less than £150

REVIEWS

57 Contents

Hardware

- 58 Rock Xtreme XSL8-9550
- 59 Acer Aspire 6935G-844G32Bn
- 60 Sony Vaio VGC-JS1E/S
- 61 Lenovo Thinkpad SL400
- Asus N80Vc

Peripherals

- 62 Lenovo Thinkpad USB Portable Secure Hard Drive
- AMD Phenom II
- 65 Nokia N85
- Truecall call screener
- 66 Humax Foxsat-HDR
- Ricoh R10
- 67 Sling Media Sling Catcher
- Western Digital WDTV
- 68 Iiyama Pro Lite E2208HDS

Software

- 68 Tune Up Utilities 2009
- 69 Norton Antivirus 2009
- 70 Serif Digital Photo Suite 2009
- 71 Magix Musicmaker 15
- Camtasia Studio 6

Games

- 72 Grand Theft Auto IV
- 73 Far Cry 2

PC Essentials

- 76 Our pick of the latest components and accessories

79 How we test

80 Best Buys

Nokia's N85 has a very good screen – see page 65

COMPETITION



159 Win an AVM Fritzbox 7270 VoIP router kit

BUSINESS

109 Contents

110 Linux, ready for business

The best way to go to open-source

Reviews

- 112 Lexmark X7675
- 113 Lacie 5big Network
- 114 Kerio Mail Server 6.6
- 115 Infocus IN5102
- 116 Double-Take Livewire

HANDS ON

119 Contents

120 Question time

Your questions answered by our experts

124 Hardware

Find the right kind of Raid for you by testing different configurations

126 Performance

Grab video from unprotected sources

128 Windows

Stop Microsoft's Intellipoint mouse software from using too much memory

138 Linux/Unix

Understand how Unix's disk handling differs from Windows' method

140 Digital imaging & video

When memory cards fail

142 Word processing

The latest version of Open Office

144 Spreadsheets

Spice up spreadsheets with graphs

146 Sound

How to avoid the annoying quirks of Windows Media Player 11

148 Networks

Synchronise files that need to be kept on more than one PC

150 Databases

Upsizing Visual Basic code and manipulating SQL Server via Access

152 Visual programming

How Silverlight and Live Mesh are blurring the web/desktop boundaries

Life's moments

Captured in a snap, lost in a second



Time's precious and you can't rewind the clock. As we become more engulfed in today's digital world, a lifetime of photos, music, videos, emails and documents are saved on our laptops and PCs.

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Editorial



kelvyn.taylor@incisivemedia.com

Lucky number 7 for Windows?

Despite the gloomy economy, the sun is shining on CES in Las Vegas, and the Windows 7 beta is showing early promise

After all the dismal retail and business news over the past few weeks, it's been good to see at least the semblance of some cheer coming out of the annual Consumer Electronics Show (CES) in Las Vegas. This show ran at the beginning of January and while visitor numbers were being predicted to be down on last year, there was still plenty of glitz and hype to be found on products ranging from web-enabled TVs to 3D desktop scanners.

One of the first big stories was Microsoft's announcement of an initial public beta for Windows 7. By the time you read this, the beta download will probably have been stopped, as we understand that Microsoft intends to limit the number of downloads.

But if you missed it, don't worry too much as we cover all the main features in our special

in December alone, bringing the 2008 total to 3.7 million, according to the British Video Association. Blu-ray players can be found for well under £200 now (PC players for around £70), and – in a reversal of the history of DVD players – rewritable drives for PCs are now becoming more readily available. We still struggled to find more than a handful for our group test on page 100, but prices are already below £150, and hopefully will drop much further as demand increases. Lots of people now own HD-Ready TVs and, once they've experienced the joys of HD TV either via broadcast or Blu-ray movies, the next logical stage is putting home-made HD content onto Blu-ray discs.

Still with HD TV, Freesat+ hard disk recorders are now appearing, with one of the first models from Humax reviewed on page 66. Freesat offers free HD content, and is one of the easiest ways of accessing high-definition programmes. Freeview should also add HD services this year as the national switchover to digital TV gets under way.

Of course, if you want to create your own movies, you're going to need some video-editing software. Most people either have their own favourite application, or stick with what's bundled with their camcorder. But often you'll find these programs lacking flexibility and features. So if you're at this stage, or just want to find out what goodies the latest version of your favourite editing package has to offer, turn to page 89 for our group test of all the top titles.

Of course, when you're watching movies on your PC, the last thing you want is for your PC to go to sleep halfway through (unless you've beaten it to it, of course). To find out how to sort out Windows' power management features to prevent such things, you might like to take some time to look at our feature on page 51. **PCW**

'It looks as though Microsoft intends to launch Windows 7 before the end of 2009'

feature starting on page 45. It certainly shows early promise, although reading through the release notes for the beta, there's still an awfully long way to go before this becomes a shipping product.

It now looks as though Microsoft intends to launch Windows 7 before the end of 2009, perhaps in time for Christmas. But with the world economy in an increasingly precarious state, I'm not even going to attempt to make any predictions that far ahead – with Intel issuing profit warnings and several top tech companies laying off staff, it's certainly going to be a rough ride this year.

One of the success stories of the Christmas shopping season in the UK was the surprising number of Blu-ray movies sold – over 1.5 million

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NEWS

IN THIS SECTION

NEWS

- 13 AMD targets ultra-thins
Freescale takes on
Snapdragon
- 14 MSI boots out Bios
Virgin starts 50Mbit
rollout
- 3D webcam hits shops
Ofcom target hidden costs
- 15 New home data standard
Iomega media store
- 17 Police can hack your PC
Spam swamps email
- 18 Zune leaps out of tune
iPlayer goes multiplatform
- 19 Adobe technical publisher
Filemaker gets friendlier
More use Mozilla

SPECIAL REPORT

- 10 Consumer Electronics
Show
Panasonic pushes HD 3D.
First Superfast USB 3.0
product. Underwater
video mask

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Windows 7 lifts CES gloom

Microsoft chose the massive Consumer Electronics Show (CES) in Las Vegas to launch the first public trial of Vista successor Windows 7.

Chairman Steve Ballmer announced during his keynote that a beta version would be posted at www.microsoft.com/windows-7. Microsoft is capping the number of downloads, so you may already be too late to get a copy. The new code has been generally well received – including by PCW's Tim Anderson, whose in-depth report on the new operating system starts on page 45.

It certainly looks good in demos. The most obvious difference is in the revamped Taskbar, which uses the icons much better than Vista, popping up usable views and menus without forcing you to maximise.

The icons are larger, too, to facilitate finger control on touchscreens; Windows 7 also supports multi-touch gestures, bringing iPhone-style control to suitable platforms.

Windows 7 is said to run on any box that can run Vista – including Atom-powered netbooks.

Ballmer also announced the availability of a new version of Windows Live, Microsoft's suite of online services. This is significant for beta testers as Windows 7 loses the current form of Vista's



Netbooks were the rage at CES. Sony's Vaio P measures 12x24.5x1.98cm and weighs just 638g with a 60GB hard disk – or 618g if you can afford a 128GB SSD option. Prices start at £849

Calendar, Mail, Photo Gallery, Movie Maker, and Contacts.

Instead you are invited you to download versions which can be used standalone or act as clients for Live versions that can be used from any browser. Microsoft gives you 25GB of online storage, too.

Some manufacturers may opt to pre-load the clients – Dell says it will. This opt-in is presumably to avoid reviving accusations of monopoly abuse, using Windows to lock people into Microsoft services.

The usual caveats about using beta code apply: don't install over a mission-critical system and back everything up. Windows 7 uses the Vista kernel and so should present few compatibility problems.

But it is reasonably stable.

Other developments at CES include the launch of a smart power supply, long propounded by PCW (see opposite and www.pcw.co.uk/2233619). And Palm's new Pre smartphone caused much excitement (www.pcw.co.uk/2233632). There's more CES news at www.pcw.co.uk/2233594.

The economic crisis cast a shadow over the show, making the razzmatazz seem odd. Jobs are at risk but a downturn could also slow innovation. Taiwanese vendors are reported to have asked Intel to delay the release of its next mobile platform to give them time to clear current stocks. See the show report on page 10.

Clive Akass

Pack your life on to a 2-terabyte SD card

Memory firms plan to make a barely imaginable 2TB of storage available on an SD card or Memory Stick. The move would enable the use of compact HD video cameras, as well as 'life recorders' that capture everything you say and do.

The SD Association announced a new SDXC (for Extended Capacity) specification at CES that will be published in the next few weeks. No timescale



The new 2TB SDXC card

was given for reaching 2TB capacity but first implementation are likely to hold less.

Read/write speeds are expected to hit 104Mbps/sec this year but the SDXC roadmap goes to three times as fast.

Sandisk and Sony announced a joint effort to create a Memory Stick Pro capable of storing up to 2TB, in a device measuring just 31x2x1.6mm, with a maximum transfer rate of 320Mbps/sec.

End of the line for adapters?

A new industry initiative could cut down our need to lug around multiple power adapters – surely the single biggest irritation in computing.

PCW has been pointing out for years that the technology exists for smart power supplies with standard connectors that deliver whatever a device wants. But the idea has never gained momentum, perhaps because vendors are making too much money from existing adapters.

The new initiative, launched in Hong Kong last month, would do away with the plugs altogether and deliver power wirelessly. This is already done by any adapter that

uses a transformer: power is transferred by wireless induction between the primary and secondary windings.

In the system proposed by the new Wireless Power Consortium (WPC), the primary and secondary would be separated respectively into the source and the device drawing power. There are eight companies in the WPC: National Semiconductor, Philips, Sanyo, Texas Instruments, Logitech, Convenient Power, Fulton Innovation and Shenzhen Sang Fei Consumer Communications.

Proprietary wireless charging devices are already available,

but they are not interoperable. The WPC aims to create a standard to allow any compliant device to be charged by any compliant source.

"This is a crucial moment in the development of wireless power," said Menno Treffers, senior director of standardisation at Philips and chairman of the WPC.

The standard relates only to power transmission across a short distance and is not about to do away with adapters. It will deliver only 5W, so is suitable for only low-drain devices. However, the WPC intends to move on to a higher power spec.

Lenovo pulls out a dual screen laptop

We've long liked the idea of a notebook with two screens that opens out like a book, though we have yet to see one gaining success in the mainstream.

Lenovo's new W700ds Thinkpad notebook has a rather different take on the two-screen idea. It has a 17in main display and a 10.6in one pulls out from the casing when required. Lenovo hopes it will appeal to people in graphics-intensive fields such as digital media creation, geophysical exploration and computer-aided design. Pricing starts at £3,459.

Lenovo's UK online shop is at <http://shop.lenovo.co.uk>.



A 10.6in screen can be pulled out as needed

Macworld gloom over Apple's lost Jobs

The annual Macworld convention at which Apple has traditionally tried to upstage the Consumer Electronics Show was most notable this year for the absence of its celebrity salesman, Steve Jobs.

It was also the last time that Apple itself will attend the show, which the company does not own. Jobs, who has looked thin in recent months, was forced to issue a denial that he is suffering from a resurgence of pancreatic cancer, for which he has had treatment. He issued a statement saying he is now being treated for a hormonal imbalance.

The other big news at the show



Jobs... and the new Macbook Pro

was that almost the entire catalogue of music at the iTunes store will now be sold free of digital rights management, so it can be swapped easily between different players.

The news was generally welcomed – though Ben Drury, chief executive at music-download site 7 Digital, pointed out that tracks will still be sold in Apple's AAC format support by few devices other than Apple products. "So consumers who buy downloads from iTunes are still restricted to where they can play that music."

Also unveiled was a 17in Macbook Pro said to run for eight hours between charges. Apple claims the batteries can be recharged 1,000 times – three times more than conventional ones. The notebook weighs 3kg – presumably because of the extra batteries.

In brief

Cheaper help calls

BT is making calls to 0870 and 0845 numbers free of charge to subscribers using its Anytime and Evening and Weekend tariffs. They are often used for technical support, which means users will be able to get help free. The use of 0870 numbers has been much criticised and led to the creation of the www.saynoto0870.com site, which gives alternative numbers for companies using the prefixes.

The Government is looking into the use of 0845 numbers by the NHS. BT estimates its decision may cost it as much as £24m in lost revenues. Mobile callers will still have to pay more for 0845 and 0870 calls. Most networks even charge for calls placed to 'free' 0800 numbers.

Green batteries

Fuji chose the Consumer Electronics Show in Las Vegas to launch these green disposable batteries, with no cadmium or mercury and using recyclable materials. They will be available this spring.

→ www.greenfuji.com



Frugal font

Even print fonts are going green. Dutch marketing company Spranq has designed a font with holes as a way of using less ink – inspired by the holes in Dutch cheese.

→ www.ecofont.eu

Home 3G

Operators are expected to start trials of Femtocell 3G cellular home base stations, following the approval of specifications by the 3PP standards body.



Frugal hybrid

MSI claims its 10in U115 Hybrid can last up to 12 hours between charges using a six-cell battery. It has both a solid-state drive and a hard drive, using hybrid storage technology to combine the advantages of both.

→ www.msicomputer.co.uk

Asus keyboard

Asus showed a quirky keyboard with a built-in PC and a screen that can be used to browse the internet or email. It can also be connected to a standard display. Connectivity options include Wifi, Bluetooth 2 and Ultrawideband HDMI.

The company also showed its first swivel-screen tablet, the T91. It's just 1in thick and uses a 1.33GHz Atom Z520 processor.

→ <http://uk.asus.com>



Oled mini PC

Handheld PC pioneer OQO showed a new model 2+ that it says is the first PC to use an Oled display. It has an 1.86GHz Atom processor, 2GB of Ram and 3G support. It will launch in the first half of this year for \$999 (£670).

→ www.oqo.com

Mini videocam

Kodak launched a tiny Zx1 digital video camera, capable of shooting 720p HD video at up to 60 frames per second. A 2in LCD and built-in software enables mobile editing.

→ www.kodak.co.uk

High-def 3D TV 'not far off'

Panasonic is pushing for a standard for 1080p high-definition 3D TV to enable services to get off the ground, its chief executive Yoshi Yamada told a CES press conference.

He said the company would propose a standard in Japan in the coming months for the system it debuted last year at the Cebit show in Germany.

"Panasonic does not think that 3D high definition for the home is far away at all," Mr Yamada said. "We are at the start of another phase-change that will have an impact on Panasonic's business."

The standard is needed for both consumer and broadcast devices to encode and decode images. Panasonic has been working with studios and standards groups to develop a format.

"3D in the home will never flower unless we have a national standard," said Bob Perry, executive vice-president of Panasonic consumer electronics. "But we are very excited because we believe that 3D changes the world from watching TV to an immersive experience."

Elsewhere in the show Mitsubishi demonstrated a system that translates 2D games and

movies into 3D and does not require the use of special glasses to view the effect. It is based on a package from Nvidia called 3D-Vision.

Philips sells software called Wowvx that does the same thing and it demonstrated an entirely different 3D system at the IFA show in Berlin last year. Instead of storing different stereoscopic data for each eye, it adds depth information to 2D pixels.

Several different 3D rendering technologies are also available, so a global standard will be hard to establish.

● BskyB trials 3D – see page 14

'Cinematic internet' on TV

Yahoo is teaming up with manufacturers Samsung, Toshiba and LG to bring the internet to a new range of television sets.

A new Yahoo Widget Engine displays a series of internet options in a scrolling bar across the base of the screen, which can be accessed using a standard TV remote control.

"The merging of the internet and television will create what we call the cinematic internet," Patrick Berry, vice-president of connected TV at Yahoo, told CES delegates.

"This will make TV into something bigger and more exciting than ever. It will allow developers to reach a whole new community."

The links will not only be for Yahoo sites – the company has already signed up photo-sharing site Flickr and free internet radio service Pandora.

Yahoo will be looking at the initiative to shore up its ailing internet business. The company had a bad 2008 and is falling behind in the search and community stakes. *Iain Thomson*

Superspeed USB link demo

Symwave demonstrated one of the first products to use the new USB3 link – its storage controller working with a Seagate Freeagent drive.

USB3 enables speeds of up to 5Gbits/sec using a technology dubbed Superspeed. That is 10 times the rated speed of wired USB2, though the real throughput is much lower. It also delivers 80 per cent more power than USB2.

Around 200 firms have joined the Superspeed USB organisation to promote the technology.

→ www.usb.org

Video technology takes a dive

This might look like a picture of the latest villain from *Dr Who*, but it is in fact a model demonstrating Liquidimage's 310 camera mask for taking still and video images underwater.

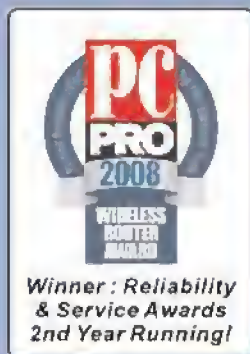
The company says it is suitable for snorkellers, free divers and shallow-water scuba divers (you can't use it below 10m). But as anyone who has been close to a coral reef will know, you can get spectacular views just dipping below the surface.

The frame rate has been pushed from 20 to 30 a second at 720x480 resolution. You can take stills at five-megapixel (2,560x1,920) resolution. It is due to launch internationally in February for \$159 (£107).

→ www.liquidimageco.com



The camera mask takes stills and video in the shallows



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- Content Filtering (by keyword or data type)
- SurfControl Web Site Category Filtering

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- Configurable QoS (traffic prioritisation)
- VPN Dial-in/dial-out with VPN co-processor
- Gigabit LAN Port for server connectivity
- USB Port for Printer or 3G Cellular Modem
- Highly configurable and easy to monitor
- See Web site for full product details



Vigor110

ADSL Ethernet Modem

- True ADSL Ethernet Modem
- ADSL Parameters pre-set for UK
- ADSL, ADSL2, ADSL2+ Support
- Ideal for load-balancing routers



Vigor2910 Series

Broadband Security Router

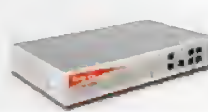
- Robust Firewall with Ethernet WAN
- CSM (Content Security Management)
- Web content filter
- Bandwidth management
- VoIP capability with 2 phone ports
- QoS for high VoIP quality
- Up to 32 VPN tunnels
- 3G Cellular Data Option



Vigor2930 Series

Ethernet Security Router

- Dual Ethernet WAN
- Robust Firewall
- CSM (Content Security Management)
- Web content filter (with SurfControl)
- High Performance WAN & VPN
- VoIP capability with 2 phone ports
- QoS for high VoIP quality
- Up to 32 VPN tunnels
- ISDN backup & connectivity



Vigor2950 Series

Dual WAN Security Firewall

- High Performance (50Mbps)
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- 5-port Gigabit LAN with VLAN
- Robust Firewall & QoS
- CSM (Content Security Management)
- Web content filter (with SurfControl)
- 200 High Performance VPN tunnels
- SSL VPN



Vigor3300V

Enterprise Multiservice Security Router

- 4-port WAN and 4-port Ethernet LAN
- Robust Firewall
- EMS management
- Web content filter (with SurfControl)
- Up to 8 FXO or 8 FXS VoIP ports
- QoS for high VoIP Quality
- Configurable DMZ port
- 200 VPN tunnels

VigorPro 5510 UTM

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- Dual WAN Interfaces
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- Real-Time Anti-Spam
- 5-Port Gigabit Ethernet LAN
- Gigabit Ethernet Port
- Vast array of security features

See web site for full specification



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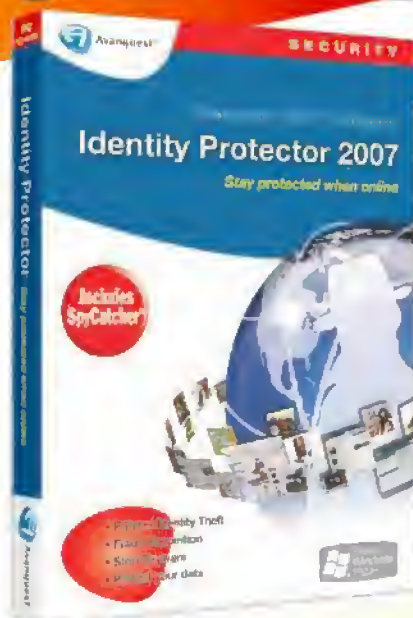
This great value software will stop others from being able to spy on your computer with Spyware, leaving you completely secure and in control online.

Identity Protector also lets you remove annoying online adverts, as well as erasing all your tracks when surfing. You can even keep all your personal data such as financial information and passwords in a special location that only you can access!

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Kelvyn Taylor

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Editor, PCW



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- ✓ **Maximum Spyware Protection**
The only software program that includes a special technology to protect you from and remove harmful Spyware – software that steals your identity and harms your computer
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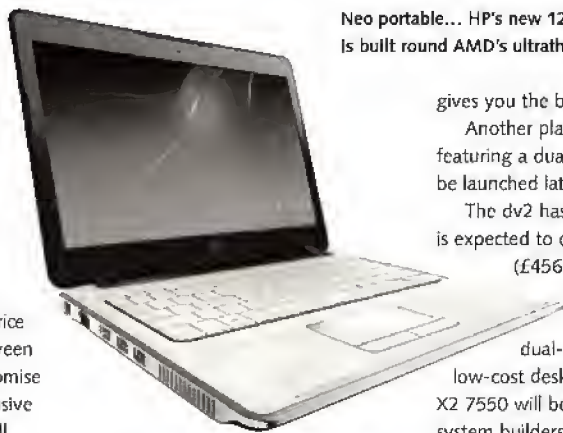
Neo fills thin portables gap

AMD has unveiled a new mobile platform designed for thin notebooks capable of rivaling more compact, but not necessarily lighter, mini-laptops in the growing market for truly portable computers.

It believes its Ultrathin Notebook Platform offers performance at the right price to fill a perceived gap between low-cost minis that compromise on performance and expensive ultraportables offering a full PC experience.

It comprises a new 1.6GHz single-core mobile chip, the Athlon Neo (codenamed Yukon), a new M690T chipset and an optional discrete ATI graphics chip. The Neo uses a Ball Grid Array package which is soldered directly into place and improves heat flow.

The platform was jointly developed with HP, which built



Neo portable... HP's new 12in DV2 laptop is built round AMD's ultrathin platform

its Pavilion dv2 notebook around it. Both were launched officially at this year's CES.

Bahr Mahony, AMD product marketing director, said the new platform provides the full Vista graphics experience in "amazingly thin yet optimally sized" laptops. He added: "What we see is an opportunity for a new highly portable notebook category that

gives you the best of both worlds."

Another platform called Congo featuring a dual-core processor will be launched later this year.

The dv2 has a 12in display and is expected to cost between \$699 (£456) and \$899 (£586).

AMD has also launched two new dual-core Athlons for low-cost desktops. The 2.5GHz X2 7550 will be available only to system builders, and the 2.7GHz X2 7750 Black Edition, with an unlocked clock multiplier, will be available in bulk, costing \$79 (£53).

As we went to press AMD launched a desktop platform codenamed Dragon, using two new Phenom II quad-cores, the 3GHz X4 940 and the 2.8GHz X4 920, plus the 700 series chipset and support for up to four ATI Radeon 4800-series graphics cards.

\$1.5bn hype

Microsoft made more than \$1.5bn (£1.02bn) from its Vista Capable campaign, which branded PCs as ready for the operating system before the launch, according to documents provided to the court during a class-action suit.

Keith Leffler, an associate professor in the University of Washington's Department of Economics, based the figure on revenues from XP licences sold with Vista Capable-branded machines, which are the subject of a class-action suit by people complaining they did not support full Vista graphics.

His evidence, submitted in a paper to court, could be used as a benchmark for penalties if Microsoft loses the case.

→ www.pcw.co.uk/2233289

Open netbook

The burgeoning netbook market is helping to drive Linux adoption around the world, according to new figures from Forrester Research.

"While Linux-based netbooks have not gained much consumer acceptance in the US, their success varies greatly by geographical market. In developing countries, Linux-based Eee PCs have fared better," said Forrester analyst JP Gownder.

"Even if a majority of netbooks run Windows, the minority that run Linux are the most successful non-Windows, non-Macintosh consumer PCs in the industry in terms of penetration."

More than a third of US households are investigating buying a netbook, according to the research.

→ www.pcw.co.uk/2233381

512GB SSD

Toshiba has unveiled what it says is the world's first 2.5in 512GB solid-state drive (SSD) using its 43nm Nand chips. Capacities of 64GB, 128GB and 256GB will also be on offer in 1.8in or 2.5in enclosures, or as SSD Flash modules.

→ www.pcw.co.uk/2232862

Freescall takes on Snapdragon for netbooks

Freescall, formerly the semiconductor arm of Motorola, is targeting the emerging netbook market with an ARM-based platform designed to run for eight hours between charges.

The reference design, a basis for finished products, uses Freescall's new iMX515

processor, which has an ARM Cortex A8 core. It will compete not only with Intel Atom-based designs, but also with Qualcomm's ARM-based Snapdragon system-on-a-chip.

Snapdragon promises to allow netbooks to run for a working day on a single charge. Freescall says

devices using its platform should cost less than \$200.

It uses Canonical's Ubuntu operating system, which is being optimised for ARM, a new power-management chip, the SGT5000 ultra-low power processor and Adobe Flash Lite, which is designed to run on mobiles.

MSI boots out the Bios on new boards

MSI has launched its first motherboards to use the Unified Extensible Firmware Interface (UEFI), which is expected to eventually supersede the Bios code that kicks in when a PC boots up.

The company says the technology will be introduced on its next-generation range, starting with the P45D3 Platinum and P45 Platinum motherboards.

The main difference for the user is that UEFI supports mouse control and a graphical interface before the operating system boots up. It also

directly supports functionality such as web browsing and instant messaging without the full operating system – though Phoenix offers similar facilities via the traditional Bios.

Vista was supposed to support UEFI at launch but it came with only the release of the 64-bit version of Vista Service Pack 1. Microsoft says there will be no 32-bit version.

"Because most new PCs now use 64-bit-capable processors, Microsoft wants to use the advent

of mainstream 64-bit computing as a transition point to enable a move toward 64-bit UEFI as the standard PC firmware," a Microsoft paper said.

Intel-based Macs already use UEFI, but Apple has the advantage of having tight control over the hardware. Microsoft points out that its support "means testing multiple Windows versions on a heterogeneous mix of UEFI firmware implementations from different firmware vendors on many hardware platforms".

In brief

20Mbit for a tenner

O2 is offering 20Mbits/sec access to its mobile customers for just £9.79 per month, with no usage caps. Customers of other mobile providers will be charged £14.68 and a receive prioritised customer service.

A Pro service for business users includes an enhanced router, better coverage, more reliability and upload speeds of up to 2.5Mbits/sec, claims O2.

Pay-as-you-go data

Vodafone is offering a £39 USB modem to allow laptop users web access on a pay-as-you-go tariff. The Topup and Go modem doubles as a USB Flash drive holding up to 4GB and the price includes 1GB of data traffic. Each additional 1GB costs £15.

→ www.pcw.co.uk/2232778

Web scores over TV

Most people would give up TV rather than broadband if they are hit by the economic downturn, according to a BT survey.

More than half of those surveyed about how they would save money said they would retain their internet link. Chocolate, television and alcohol were regarded as indispensable by only 25 per cent, 22 per cent and 17 per cent of respondents, respectively.

→ www.pcw.co.uk/2232936

iPhone remote access

Log Me In has released a version of its remote access tool that allows iPhone and iPod Touch users to control Windows and Mac systems remotely. The Log Me In Ignition client can be purchased through the iTunes App Store for \$29.99.

→ www.pcw.co.uk/2232741

Virgin starts 50Mbit rollout

Cable giant Virgin Media has begun a rollout of 50Mbits/sec services and promises speeds of up to 200Mbits/sec within two or three years.

The speed boost has been achieved using the Docsis 3.0 standard, which covers data transmission by cable and allows separate channels to be bonded into a single faster one.

"This is just the beginning," said Kevin Baughan, director of technical strategy, launching the 50Mbit service in London. Data rates of up to 200Mbits/sec have already been achieved in the lab and will be possible on home links after the phasing out of analogue channels, which are now used by only five per cent of Virgin customers.

Prices for the new service start at £35 a month and there is a £50 start-up fee, which includes a new modem and four-port 802.11n wireless router, which will be installed by an engineer.

Executives said the company was supplying the router because it had found many off-the-shelf products could not deliver the performance needed for a 50Mbit link. They insist the router is future-proof, though 11n Wifi cannot normally support the projected 200Mbits/sec data rate.

The 50Mbits/sec service is now available to 40 per cent of subscribers and the rest will be enabled by this summer, according to Virgin Media chief exec Neil Berkett.

He refused to say how much the company is spending on the

upgrade, but Virgin Media probably has no choice but to get it in place before rival BT upgrades. Currently, Virgin has more headroom on bandwidth than any of its rivals.

Gordon Brown unveiled plans at the new year to invest in upgrading Britain's broadband infrastructure as part of his 'New Deal' scheme to create up to 100,000 jobs.

However his announcement was notably short on details. Ironically some emerging economies have more advanced broadband than 'developed' countries because they can start from scratch with fibre.

Virgin insists the routers are future-proof although there is no way, without doubling up channels, that Wifi can hit the 200Mbits/sec the company says will be on offer soon on its broadband links.

Ofcom clamps down on hidden costs

Nearly three in 10 broadband users have been hit by unexpected charges, according to a survey by price-comparison site Moneysupermarket.

The survey of 2,016 users revealed hidden charges for paper billing, non-direct debit payments, late payment, installation, support, exceeding downloading limits and activation fees.

They cost an average £36 per year and earned providers an additional £160m in revenues.

BT was identified as the worst offender with an extra £51 per year, followed by Virgin Media (£42), Sky (£35) and AOL (£29).

"Although we've seen telecom bills fall in the past year, providers are still clawing back millions with unnecessary charges, many of which are unfair," said James Parker, mobile/broadband manager at Moneysupermarket.com.

"Ofcom should either eradicate these charges, or impose strict caps to protect the consumer."

The survey came as regulator Ofcom issued guidelines for service providers on how to comply with the Unfair Terms in Consumer Contract Regulations Act of 1999.

Telecoms and pay TV companies have until April to bring their terms and conditions into line, after which Ofcom will "consider the best way to make sure they comply with the law".

An Ofcom statement said: "These companies need to be clear and up front with their customers."

3D coming online and to BSkyB television

Media giant BSkyB has demonstrated a 3D television transmission delivered via a standard Sky+ HD system to a 3D-ready TV. The system requires users to wear special glasses though they are not needed by all 3D systems.

BSkyB's demo of 3D content included football and rugby matches. Gerry O'Sullivan, director of strategic product development, said the company's

strategy was to anticipate future demands, "including the potential to turn HD into 3D".

3D is also coming online. The Minoru 3D webcam (right), previewed in PCW last year, should be available at Amazon and Firebox.com by the time you read this. It costs £49.95. Minoru, which means 'reality' in Japanese, can be used with Windows Live Messenger, Skype, and other video-conferencing packages.



Home data standard mooted

A new network standard is designed to send data over home power wiring, co-axial cables and telephone wiring at speeds high enough to deliver high-definition video.

The G.hn standard, which has just passed the first phase of ratification by the International Telecommunications Union (ITU), could appear in products as soon as 2010.

It is backed by the Homegrid Forum, a group of vendors including Intel, Infineon, Panasonic and Texas Instruments.

Forum president Matthew Theall, a technology strategist at Intel's Digital Home group, said it should allow data rates up to 400Mbps/sec over co-axial cables, up to 200Mbps/sec over power lines and somewhere between the two over phone extensions.

It will also allow devices connected to one type of cabling to



Rivalry on the mains... a Netgear Homeplug adapter

communicate with others linked to a different type.

The Homegrid Forum foresees a digital video recorder streaming HDTV over the mains wiring. Chips supporting the standard might also be built into computers, set-top boxes, residential gateways, audio systems, TVs, or any other device

that uses a network connection.

"In the future, phones might integrate the chipset so you can plug your phone into the wall and make IP calls over the power line," said Theall.

The Forum hopes to have a full specification by September 2009, which will allow chip manufacturers to have transceivers ready for the first half of 2010. Theall expects the

transceiver chips to add only a small cost to devices.

However, the standard could come up against competition with others, such as that promoted by the Homeplug Powerline Association. This is restricted to data-over-mains but is already well established.



Iomega media hub on stream

Iomega has launched its Home Media Network hard disk, which it claims sets a new standard in easy-to-use storage for the digital home.

It comes in 500GB and 1TB versions, costing £135 and £180 respectively, and uses EMC's Linux-based Lifeline software to facilitate backing up home devices and streaming multimedia content to them.

The product supports iTunes, Universal Plug and Play (UPnP) and Digital Living Network Alliance (DLNA) certified devices. Users also get 2GB of online storage free, or unlimited storage for \$4.95 (£3.40) per month.



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Police can hack into your PC

Police and security services have been granted new powers to hack into personal computers without a warrant, following European Union proposals aimed at extending the use of intrusive surveillance.

They allow the use of keyloggers, which can be installed in a variety of ways, to monitor keyboard use including emails, web surfing and instant messaging conversations.

Authority must still be obtained from a chief constable, but the new measures have angered opposition MPs, and civil liberty and privacy organisations are threatening a legal challenge.

"The exercise of such intrusive powers raises serious privacy issues," said Shadow Home Secretary Dominic Grieve. "The government must explain how it would work in practice and what



safeguards will be in place."

Shami Chakrabati, director of human rights group Liberty, added: "These are very intrusive powers. The public will want this to be controlled by new legislation and judicial authorisation.

"Without those safeguards it is a devastating blow to any notion of personal privacy. This is no different from breaking down someone's door, rifling through their paperwork and seizing their computer hard drive."

The Association of Chief Police Officers (ACPO) defended the

Keyshark hardware keylogger... police will be able to hack into personal computers remotely

move, pointing out that it would still be governed by the Regulation of Investigatory Powers Act.

"To be a valid authorisation, the officer must believe it is necessary to prevent or detect serious crime... and that it is proportionate to what it seeks to achieve," said an ACPO spokesman.

"The police service in the UK will aggressively pursue serious and organised criminality, including where that takes the modern forms of high-tech crime."

According to the police, 194 police hacking operations were carried out in England, Wales and Northern Ireland over the past two years: 133 in private homes, 37 in offices and 24 in hotels.

Ian Williams

'Roadmap to soul' privatised

A private company will run the government's proposed database of every phone call, text, email and website visit made in Britain.

The plan, instigated by home secretary Jacqui Smith, is to cut the cost of collecting and maintaining the records but there will be tough penalties if the data is misused, according to a *Guardian* report.

The proposals came in for strong criticism, not least from Sir Ken Macdonald, ex-director of Public Prosecutions. "This database would be an unimaginable hell-house of personal private information," he said. "It would be a readout of every citizen's life in the most intimate, demeaning detail. No government is to be trusted with such a roadmap to our souls."

Service providers currently hold the details of customer activity, but the government plans to spend £12bn on a 'more efficient' combined database.

Macdonald said: "Total security is a paranoid fantasy that would destroy everything that makes living worthwhile... We must avoid surrendering our freedom to such an ugly future. We should make judgements that are compatible with our status as free people."

→ www.pcw.co.uk/2233212

China jails piracy ring

China has jailed 11 men for running a piracy racket said to have distributed \$2bn worth of counterfeit Microsoft products in 36 countries on five continents.

Sentences ranged from 18 months to six years – the highest yet for piracy offences in China. The operation was broken in 2007 in a joint operation by China and America, in what was said to be the world's largest piracy bust.

China has been widely criticised for its leniency on patent infringement. "Enforcement of intellectual property rights is critical to innovation and fair competition," said Fengming Liu, Microsoft's VP of the greater China region.

→ www.pcw.co.uk/2233213

BT set to go ahead with 'intrusive' Phorm

BT has concluded its trial of the controversial Phorm online advertising system and is set to go ahead with its widescale deployment.

"The trial... achieved its primary objective of testing all the elements necessary for a larger deployment," a BT spokesman said.

Phorm uses browsing data to serve accurately targeted

advertisements. Its creators claim that any data collected would be anonymous, but critics suggest it might be intrusive and could violate personal privacy.

A petition, which asks the UK government to regulate Phorm's use, is ongoing until March and holds almost 20,000 signatures.

An online petition set up to try to persuade the government to halt the controversial Phorm

online advertising programme has attracted more than 18,000 signatures since its introduction in March.

BT is not the only service provider considering using the tool, according to campaigners. "The system doesn't breach privacy – it's an improvement for online privacy over what is offered today," said Jonathan Carter, senior media manager at BT.

Spam to hit 95 per cent of all emails

Spam will comprise more than 95 per cent of all email in 2009, despite a crackdown on several major spam outfits in recent months, according to IT security firm Barracuda Networks.

It said spam levels last year remained largely unchanged compared with 2007 – at between 90 and 95 per cent.

However, the growing use of botnets – networks of hijacked machines – could push up figures in 2009, the company says.

Stephen Pao, vice-president of product management at Barracuda, said spam is coming increasingly from countries such as Brazil and Turkey, as well as the 'usual suspects' of China and Russia.

"We believe this is due in part to residential broadband penetration and a proliferation of datacentres in various countries around the world. As broadband availability increases, the reach and control of botnet activity

also grows. Unsecured datacentres are ripe for hacking and hosting malicious content."

Hackers are using clever techniques to circumvent spam filters, including identity obfuscation, devious clever social engineering, and hijacking legitimate email accounts.

"Phishing attacks are certainly not new, but the levels of sophistication can be quite astounding," said Pao.

→ www.pcw.co.uk/2232782

Multi-platform iPlayer beta

A beta version of the BBC's iPlayer client now extends the programme download service to Mac and Linux users, not just Windows PC users.

The iPlayer Desktop download manager, which uses Adobe's AIR screen-drawing technology, allows UK users to view shows online or offline. It will be available later this year and users can sign up as beta testers at www.bbc.co.uk/iplayer/labs.

The BBC also plans a version for viewers aged between six and 12 – iPlayer for CBBC. It will host children's shows such as *Blue Peter*, *The Sarah Jane Adventures* and *M1 High* for up to 13 weeks as part of the BBC's series catch-up feature.

It will also help restrict access to programming not meant for young viewers. "Children live in an interactive, on-demand world and this launch means CBBC can be there for them," said Richard Deverell, controller of BBC Children. → www.pcw.co.uk/2232956

Zune leaps into Y2K trouble

Microsoft's Zune media players were hit by an embarrassing new year hitch reminiscent of the legendary Y2K bug.

The problem, limited to the 30GB Zune 30 made in 2006, emerged when players began to freeze because their internal

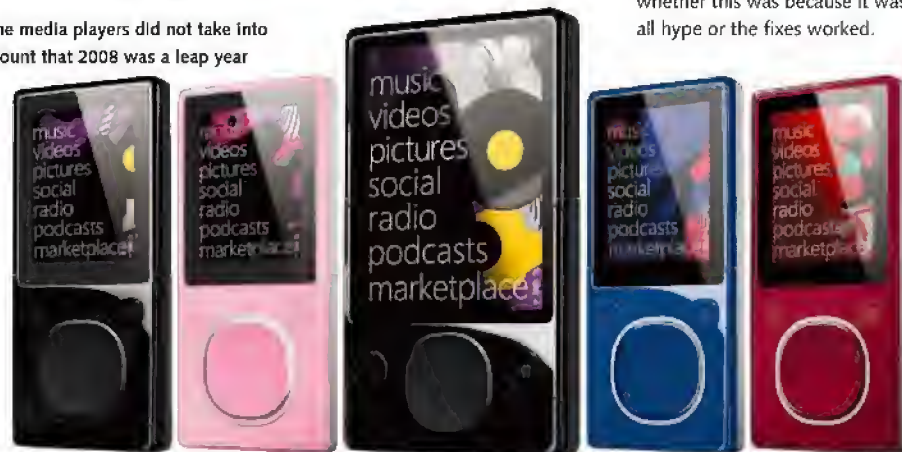
calendar took no account of the fact that 2008 was a leap year.

Most affected machines fixed themselves by resetting their calendars at noon GMT on 1 January. Owners of crashed machines were advised to leave them on until the battery discharged to force a

reset and then resync with their PCs to square the digital rights control.

Fears that a Y2K bug would cause similar problems at the millennium spawned an entire sub-industry offering fixes. It turned out to be a non-event, but it has never been established whether this was because it was all hype or the fixes worked.

Zune media players did not take into account that 2008 was a leap year



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Adobe Technical Communications Suite 2 includes Photoshop CS4 for tight integration of image processing into workflows.

Central to the package is the Framemaker 9 publishing module, which has been revamped with a user interface similar to Adobe Creative Suite 4.

Books created under Framemaker 4 now support XML, including Dita 1.1 and 1.2 formats. It can export and import to Adobe

Acrobat 9 Extended, which is also included in the suite. This allows documents to be shared and reviewed easily, without a dedicated server, via www.adobe.com.

Other modules in the suite include Captivate 4 for creating Flash-based simulations and software demos, and RoboHelp 8 for authoring help files. The latter supports Adobe's AIR screen-writing technology which allows help files to be sent via mobile devices.



The suite includes Photoshop CS4

The addition of Photoshop provides access to Adobe Screen Capture and Adobe Bridge, for linking modules.

RJ Jacquez, senior product evangelist at Adobe, said the

new suite provides a "solution for authoring, reviewing and publishing technical detail."

For pricing and availability see an update of this story at www.pcw.co.uk.

Device 'back seat driver'

Microsoft has found a new angle on the design of touchscreens – by putting the control surface on the underside of the device.

The design stems from a project called Nanotouch which aims to improve touch control on screens. Putting the control surface on the back solves the problem of fingers blocking the control display, according to Patrick Baudisch of Microsoft Research, who is also a professor of computer science and human-computer interaction at Postdam University in Germany.

The interface makes it possible to play video games on a screen the size of a credit card, he told MIT Technology Review.

The team found that people completed tasks using the system at roughly the same speed, whatever the size of the display, but at the smallest size rear control was more accurate.

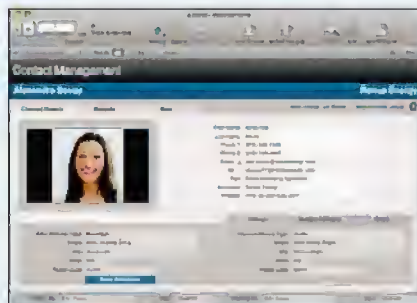
Filemaker 10 puts on a friendly face

Version 10 of the Filemaker database suite features a new interface design, features to help new users, and enhancements for business users.

The simplified interface puts the most commonly used functions in plain sight, according to the developer.

Kieran Saunders, Filemaker sales engineer for Northern Europe, said a lot of new users are unfamiliar with database work. "They've been using data in a spreadsheet and now the boss wants to have that information in a database. We've made it easy to grab an Excel file, import it and get started with a solution in literally 30 seconds."

For more professional users, Filemaker has added Script



Filemaker 10's new interface is aimed at helping new users

maximum 256, so expanding firms can continue to use Filemaker.

Filemaker also includes a CSS format optimised

Triggers that facilitate the use of scripts that run when certain conditions are met.

They can be used to schedule actions or validate input. "For developers, this feature will just blow them away," said Saunders.

The server version of Filemaker 10 now supports up to 999 concurrent users, up from a

for display on Apple's iPhone, giving it easy browser access to a database.

The software is available in four versions: Filemaker Pro 10 (£219), Filemaker Pro 10 Advanced (£329), Filemaker Server 10 (£699) and Filemaker Server 10 Advanced (£2,199).

Daniel Robinson

Adobe on TV

Adobe Flash technology will extend to a wider variety of devices thanks to a collaboration with Intel.

The Open Screen project will port Flash Player and Flash Player Lite to Intel's CE 3100 media processor to allow the viewing of web-based content and video on TVs, set-top boxes, media players and other devices.

The idea is that what you see on your laptop will be exactly the same on these other devices. Adobe is also working with chip designer ARM to optimise its technology for that platform.

One in five surfers uses Firefox browser

Mozilla's Firefox has broken the 20 per cent barrier in worldwide use, according to the latest data on browser market share.

Figures collected by Net Applications put it at 20.78 per cent for last November, with Microsoft's Internet Explorer falling below 70 per cent for the first time. Apple's Safari was used by over

seven per cent and Google's Chrome by fewer than one per cent.

John Lilly, chief executive of Mozilla, described the news as a milestone for the open-source project. "It is a huge achievement by the global Mozilla community that most would have considered impossible just a few years ago.

"The open web is more vibrant than ever and the thousands of Mozilla contributors around the world have played a major role in making it that way."

Net Applications suggested that higher unemployment may have pushed up the figures as a higher proportion of home users go for Firefox.

Notes 8.5

Version 8.5 of the Lotus Notes/Domino collaboration software, launched last month, is said to have better Mac support.

All versions can now use the built-in Lotus Symphony Open Document Format editor and the Calendar is more flexible. Caching of attachments sent to multiple users has cut storage requirements by 70 per cent.

→ www.pcw.co.uk/2233365

IN THIS SECTION

20 LETTERS

OPINION

- 25 Gordon Laing
- 26 Barry Fox
- 28 Guy Kewney

LETTERS

→ Send your letters to The Editor, PCW, Incisive Media, 32-34 Broadwick Street, London, W1A 2HG Send your email to letters@pcw.co.uk

★
LETTER OF THE MONTH

Whose PC is it anyway?

Can someone tell me please who owns my computer? Or, more correctly, who decides when I'm allowed to use it? I bought a new laptop a few months ago with the Vista operating system and I don't seem to be in control of it.

I'm referring to the intrusive behaviour of Vista, which seems to make its own mind up about installing updates. I use my laptop every few days, and each time it is turned on it tries to install a set of updates. Today I've discovered some new alarming behaviour: it will make its own mind up when to restart as part of this process. Never mind that I was editing a spreadsheet and had unsaved changes – Vista must upgrade so often the users (and the changes) must go. I was out of the room at the time and came back in just as it was kicking me off – too late.

I think I've found out how to stop this, but was it really necessary in the first place? Was the software so very badly written that it needs a daily update? If not, what is it doing? I haven't noticed anything new at the end of all this – just a lot of lost time when what I actually wanted to do was work. My car doesn't take itself off for a fuel injection upgrade; I don't recall my toaster going back for a superbronze slice mode upgrade. Why is my PC subjected to this unwelcome behaviour?

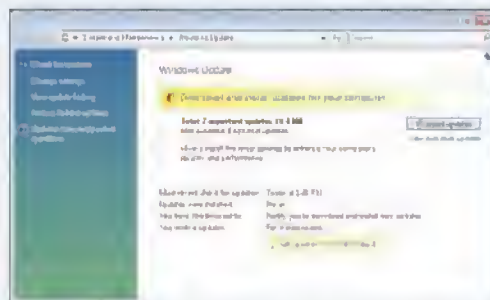
This doesn't stop with Vista. I can understand my anti-virus

software needing updates, but the laptop supplier also has software on there that updates itself. It doesn't seem to be alone. Who gets the right to do this and where does it end?

Just because speedy access to the internet means that software authors can do this, it doesn't mean they should. Some kind of opt-in rather than opt-out system might be appropriate: perhaps the settings for this kind of behaviour could be put in one place, with a big red 'No' box close to hand.

Laurence Barker

Nigel Whitfield replies: The internet can certainly make it much easier for software companies to distribute fixes – but you're not alone in wondering if that means they never finish their products. With so many security issues online, most companies would argue that automatic updates are a necessity – but perhaps there is a need for a middle way, or more intelligence in the system.



Vista not only makes up its own mind about installing updates, it can also restart without the user's consent

WHY PAY MICROSOFT?

I am a bit surprised at your answer to Graham Stewart's letter in your January 2009 issue, when he complained about the difficulty in finding a pre-installed Linux computer. Rather than chase around various manufacturers, compromising on your (the consumer's) needs, the simple answer is to buy the computer that meets your

requirements, fire it up, refuse the Microsoft licence, install the operating system you want and claim a refund from the Microsoft original equipment manufacturer. A lot of people have done this.

Why should consumers be forced to pay what amounts to a tax on computers to Microsoft when they don't need to? If enough people ask for a refund on the Windows licence then

manufacturers will be forced to offer alternative operating systems to cater for the needs of the consumer rather than the needs of the manufacturer or Microsoft.

Terry Pike

Nigel Whitfield replies: Yes, you can refuse to accept the licence to install Windows, but we suspect it will take an awful lot of people demanding



Virgin Mobile Broadband does not support emails sent via SMTP

refunds to make a difference. Linux may have many users, but even if they all bought a new laptop and asked for a refund, it still probably wouldn't be enough to persuade many manufacturers to change their ways.

BROADBAND FIXES

For a long time I have suffered losses of internet connection which could only be solved by rebooting my router. I have also noticed a background hum on the telephone.

I asked my wife if we still had the phone that used to be plugged in elsewhere so I could try that. She produced it, with the microfilter still attached. The penny dropped and I simply exchanged microfilters. Results are a quieter phone and reliable internet connection.

If any reader suffers similar problems – don't forget the microfilter!

Jonathan Beard

BROADBAND WOES

In the news section of January's issue I read that Virgin Media Broadband customers can get a 1GB mobile broadband deal for £5 per month.

I work away quite a bit so £5 per month will pay for itself in no time, compared with extortionate hotel Wi-Fi and dial-up charges.

I ordered two Virgin Mobile Broadband dongles (for me and

my wife), which arrived the next day. I inserted the Sim card and plugged the dongle into my laptop. It installed its software but it would not connect. Virgin's technical support blamed Norton Internet Security and said they were working with Symantec on the issues. A few tweaks of the firewall later and I had it running nicely at 3.6Gbits/sec on HSDPA: not as fast as cable at home, but perfectly acceptable for keeping in touch while staying at a hotel.

Then I composed a new email to a friend and pressed send. I waited, and waited, and waited... until it timed out. Virgin was baffled but again pointed the finger at Norton Internet Security. The Symantec remote assistance chap played with my firewall settings but nothing worked.

Next day I uninstalled Norton Internet Security and did some investigating. I send emails through Tesco (mail.tesco.net) and BT (smtp.btconnect.com), and Outlook could not log on to either of these when using the Virgin dongle. What about Virgin's own mail server? Even via smtp.ntlworld.com (which is now owned by Virgin) it could not log on to send an email.

Virgin was stumped. Tesco said it wasn't surprised because it actively blocks some ISPs. BT blamed Virgin and offered me its own dongle for £17.99 a month.

So, reluctantly, I had to return

the dongles to Virgin. I emailed Virgin this sequence of events and asked to be informed when it had resolved the issue.

This evening Virgin phoned me to say that sending emails via SMTP is not supported. It doesn't know why, and it doesn't know if this will change. "We only support web browsing. You'll have to use web mail."

So, Pop3/SMTP email users beware – Virgin Mobile Broadband is not for you.

Steve Bailey

FREE TO ROAM

In the mobile broadband group test (PCW, February 2009) you highlight the risks of roaming, stating that international data charges can be expensive – £6 per megabyte on the 3 network. However, in some countries 3 charges nothing extra for

international broadband roaming on pay-as-you-go. You will get to use the data allowance you have paid for as if you were still in the UK. On the 3 network this is called '3 like home' for obvious reasons.

I have used it in Hong Kong and can confirm it works exactly as it is meant to, saving my company lots of money compared with using hotel broadband connections. It does not work in mainland China, but if your travel plans include Italy, Denmark, Austria, Ireland, Sweden or Hong Kong, this could be a real moneysaver and an excellent alternative to the rip-off roaming charges that your piece highlighted. Other mobile operators take note.

Paul Trowbridge

PROGRAMMING BASICS

I have a program written in Quick Basic 4.5, which I last ran in 1996 on a computer now long gone. My nice new machine, with Vista Home Premium and a 22in LCD monitor, will not run QB4.5 as it "does not support full-screen mode".

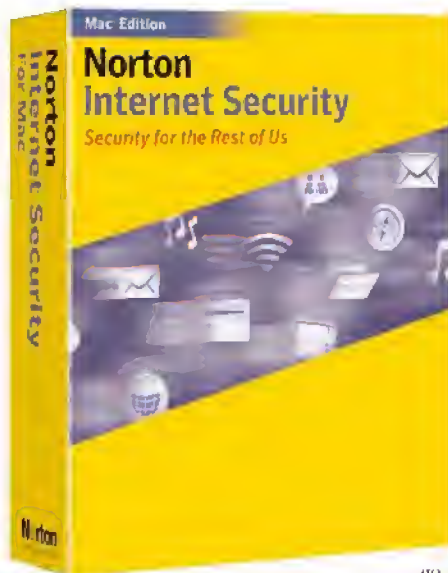
The program produces solutions to filling the Heptiamond Snowflake (draw a hexagon made from 24 equilateral triangles, then surround it with six more such hexagons) using the 24 heptiamonds that can be produced using seven triangles. These 24 pieces are stored in their 246 possible attitudes, inserted into the pattern following complex rules for

CLARIFICATIONS & AMPLIFICATIONS

● Due to a technical problem, we were unable to include the featured free game 'Azteca' on the CD edition of PCW's February issue. We apologise for this omission. The full game is available for download from <http://tinyurl.com/8d6gar>. It will also be

included in the April 2009 CD edition.

● In our review of Nav N Go iGo 8 (PCW, Christmas 2008, p97) we stated that it does not support postcode entry. This was incorrect, as partial postcodes (first four digits) can be entered.



Installation of Norton's Internet Security 2009 doesn't always go according to plan

stating that a vital dll has not been installed. I download SymFix_1002-1 from Norton and have to restart my PC. Installation continues, but I have to enter the Product key again.

The installer reports that there is less than a minute to go and that it is "Collecting

selection, then when the pattern is filled the coded results are output and another solution is sought. Repeat thousands of times, not all in one run.

I have a library of more than 50,000 solutions found manually over 40 years and some hundreds found by the few runs of my program. I would like to know how many there actually are.

Is there a more modern Basic I can investigate? I have seen a 2002 version of Visualbasic.net which appears to be solely oriented to handling bits of information entered in dialogue boxes and the like, not what I want. I said 'Basic' as that is the programming language I know, but I'm very willing to try anything.

Roy F Fear

Nigel Whitfield writes: Over to the readers? Besides Visual Basic, what other languages might suit the job? And are there any mathematicians among our readers who may already know the answer?

FUN WITH NORTON

Here's the the actual process for installing Norton Internet Security 2009: The CD Autoruns and Installshield starts installation of the Realtek AC 97 Audio Driver. I can't believe my eyes, so I insert the CD again and, yes, it starts installing the audio driver. So, I browse to the Setup.exe file, double-click and enter the Product key. After a while an error message is displayed

Error logs - Please wait". 45 minutes later it looks as if the process has frozen, but then the installation fails and recommends a retry.

Installation continues and I leave it overnight. It fails, so I download the Norton Removal tool. The Knowledgebase warns that Winfax data should be backed up and that it will also remove the Norton System Works on my PC.

When I run the Norton Removal tool, it finds the Winfax program and stops. I have to uninstall Winfax manually.

When I re-run the installation, it still fails. So far I have gone from a working system - although with an expired subscription - to a system with no AV protection, no Winfax and no Systemworks.

There were no relevant items in the Knowledgebase, although there was one that related to a failure to install on an HP Laptop under HP Recovery Manager (I don't have either). This required that the Norton Installer folder be deleted. There's nothing to lose so I decided to rename this folder and retried installation. A miracle occurs, Norton Internet Security installs! Now all I have to do is reinstall all my other Symantec applications.

Surely Norton must have tried installing over a previous version? Even its tool - which removes all trace of any Norton installation - fails to work properly. The

one-minute installation has now taken about five hours and resulted in the loss of several clumps of hair.

Alec Bowman

MORE NORTON FUN

A couple of days ago, I found that my 70GB drive, which normally has about 25GB of free space left. The reason? The Nprotect folder had been loading up since the beginning of October with dud files that could neither be read nor deleted - a total of 29GB. This could only have been caused by a failure of Norton programs to execute correctly since I am not aware of any other instance of dud files being created.

An immense amount of time on the phone with Symantec left me no further forward - as far as Symantec was concerned unreadable files under Windows XP had never occurred before. Strange, then, that punching the appropriate Windows error message into Google led me to DelivFile.exe, which was able to give me my 29GB back.

Stephen Younger

FIGHTING THE FIGHT

On reading last month's issue of PCW, I came across Barry Fox's column and had my usual reaction: "Oh no, what's he writing about now?" I'm not Barry Fox's biggest fan, but I found his article about his fight with Dell over a sub-standard projector oddly heartwarming.

It's sad that ordinary consumers have to threaten court action to get satisfaction from such big-name companies, and rather gives the lie to this 'we take your comments seriously' chatter.

My experience with the small claims court was also positive, though it had nothing to do with computing. Computing and personal computing is dogged by poor software warranties - when was the last time you took back a copy of Windows because it was not "satisfactory, fit for purpose, free from defects or durable"?

So, instead it is especially important to hold manufacturers to account for poor hardware so that they up their game. Don't let them get away with it.

Cheers, Barry!

Andrew Ircha



Next month's prize for the letter of the month is a Logitech Audiohub



The Audiohub provides premium audio in a compact notebook station. The space-saving design combines a powered three-port USB2 hub with a 15W speaker system featuring high excursion drivers and an innovative three-chamber design with integrated subwoofer.

With a telescopic body and webcam stand, it can be adjusted to suit most laptops and monitors, and the USB-audio support can give a welcome boost to the sound capabilities of many portables.

For more information on the Audiohub and other Logitech products visit www.logitech.com.

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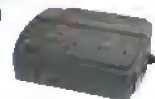
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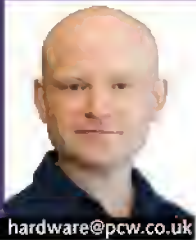
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Gordon Laing



hardware@pcw.co.uk

Piggy in the middle

You'll have to copy the professionals and use a disk-hogging intermediary format to edit some high-definition video

High-definition video may look great, but it has been responsible for a fair share of headaches. First there was confusion over the HD readiness of early models, followed by uncertainty over pre-recorded HD content. Now comes a third wave of frustration with the increasing adoption of HD camcorders and their tough requirements for editing and playback.

High-end camcorders have captured HD for some time now, but they've generally been used by videophiles or professionals who understand their specific requirements. Over the past year, many consumer camcorders have switched from standard to high-definition capture, as have a number of the movie modes on digital still cameras.

If you've only ever played recordings back from your camcorder on its screen or directly connected to a TV, you'd be forgiven for thinking

Editing is another matter. Even if your application is able to understand the HD formats, the experience will be different from editing standard-definition DV content. Scrubbing back and forth to find an editing point can become unresponsive, while previewing can be choppy.

Throwing hefty processing muscle at the problem may not help either. I recently rebuilt my main PC with a Quad Core Extreme processor, 6GB of Ram and a striped Raid 0 array. Editing HDV became almost bearable, but H.264 remained intolerable. So what do the pros do?

The answer lies with the files themselves. MPEG-2, and in particular H.264, were never designed for editing. They're meant for efficient acquisition and storage in a portable device. Pros wouldn't dream of editing with them in their native format and instead transcode them into a larger but less demanding intermediary format.

Apple's Final Cut Pro already offers its Prores 422 intermediary format. Pro Windows users rely on companies such as Cineform that offer intermediary conversions that plug into programs including Adobe Premiere. At the time of writing, budget options targeting consumers were thin on the ground, but they will come.

An alternative to the time-consuming process of transcoding previously captured video is to regrab it in real time using a more appropriate compressor. Black Magic Design's Intensity card can capture footage over HDMI and store it in a more editing-friendly Motion JPEG format.

But anyone hoping to match their previous workflow for DV, where footage could be captured and edited quickly in its native format, should think again with HD. Beefing up your hardware may allow you to come close with HDV but AVCHD and other H.264 formats demand an additional stage where they're converted into something more friendly. Intermediary formats have long been a fact of life for pro editors and now consumers will also need to adopt this extra stage or find editing software that includes it.

As AVCHD becomes more prevalent and normal people start trying to edit their footage, manufacturers will soon realise that new tools are needed for the job. **PCW**

'Throwing hefty processing muscle at the problem may not help. So what do pros do?'

everything's hunky-dory. But you're being lulled into a false sense of security by your camcorder's dedicated processing which is designed for smooth, effortless playback. Transfer the same footage to your PC for editing or viewing and your HD dream could come grinding to a halt.

The problem is the compression used by consumer HD cameras. Manufacturers are fond of telling us how an HD frame contains up to five times more detail than standard definition, but in real terms that means five times more data to handle – and that means applying greater or more efficient (but complex) compression.

The HDV standard employs MPEG-2 to cram HD (albeit at slightly squeezed 1,440x1,080 pixels) into the same bit rate as old standard-definition DV systems. The newer AVCHD standard shares a similar maximum bit rate to DV but exploits the complex H.264 format to deliver great-looking footage captured at 1,920x1,080 pixels.

In terms of playback, most modern PCs should handle HDV files fairly easily, but AVCHD footage is roughly equivalent to Blu-ray movies, demanding powerful processors and graphics chipsets with dedicated acceleration.

Barry Fox



barryf@pcw.co.uk

Credits of the crunch

The economic downturn may at least force IT firms to sharpen up their acts and start treating their customers with respect

Pollyanna always looked on the bright side. So she'll be seeing the economic crunchdown as a wonderful opportunity to shake up the IT industry.

We are no longer buying for the sake of buying, or upgrading out of curiosity – we need persuading to pay. Those people in sales, marketing and PR will only keep their jobs if they start showing some interest in what they are selling.

The threat of Linux has already made Microsoft face reality by reprieving XP and sidelining Vista by promoting Windows 7. Open Office is undermining the price structure for Microsoft Office. Filemaker for Windows is far easier to use than Access but over-featured and over-priced for many users. If the credit crunch brings a more affordable, stripped-down version of Filemaker, Microsoft will be in more trouble.

'We are no longer upgrading for the sake of curiosity – we need persuading to pay'

It can't be long now before Symantec wakes up to wonder how any consumer can work out which of the many similar but different Norton protection packages to buy. Symantec will also have to rethink its crazy pricing structure that makes buying online, and then struggling to burn an emergency boot disc, no cheaper than buying a boxed version with Recovery CD.

In the US aggrieved customers have started legal action because some Symantec software, such as Norton 360, insists on the removal of other Symantec software, such as Norton Utilities. Iolo's System Mechanic is busy filling the market gap created by Symantec's marketing.

I have been looking for the perfect backup program since Norton Ghost abandoned the bomb-proof trick of dropping the PC out of Windows and into Dos to make an exact copy of the C drive. Several colleagues recommended Acronis. Maybe, but the company first needs to look at its customer support service. When I tried True Image Home 2009 I found a big difference between the way privileged press and paying customer queries are answered.

The Acronis press office provided answers fast, but when I put a consumer question (on problems creating the backup Secure Zone and using a wireless mouse with the rescue software) the Acronis support service took six weeks to come up with half a reply and blamed the delay on "problems with our email database".

Acronis' press officer apologised and promised "improvements to our customer support services". After a couple of months I played consumer again, asking why my True Image remains idle when told to make a backup. After more than two weeks I am still waiting for help.

Seagate recently sent a 1.5 TB hard disk with onboard encryption to secure stored data, but my PC would not recognise the disk. The factory-sealed package contained a disk that had never been formatted. More than a month later I am still waiting for Seagate to explain how the factory's Quality Control had approved an unformatted disk.

With money tight, the price of printer ink will become an even bigger issue. Even Epson admits that the Piezo head system used on all its printers will clog unless the printer is regularly used. Give me Lexmark every time. They can sit idle for weeks, and still deliver a perfect page.

The Ecobutton is a nice money-saving idea from a small company for just £15. A big green button sits by a PC and puts it to sleep with one press. The blister packaging promises 'instructions inside' to 'plug in, click and start saving'. But anyone who just plugs into a USB port and clicks will only see a window briefly pop up on the PC screen and disappear. Inside the pack the 'instruction' is a card giving a website address. To make the Ecobutton do its job the user must go to the website, register, wait for an email and then download instructions and software for the PC. The software then asks for details of the PC's power consumption.

I asked for comment on this absurd obstacle course. The suppliers "believed the sample sent was missing instructions in error". Another one arrived but it was just the same. I told them but heard nothing – until a marketing person asked if I was writing anything.

Yes, I'm writing that in the current climate you can no longer expect to get away with treating paying customers this way. **PCW**

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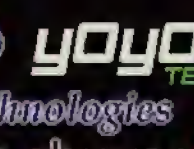
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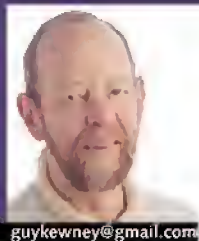
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Guy Kewney



guykewney@gmail.com

Boom time at the corner shop

A new PC can work out cheaper in the long run than fixing an old one. So why is the local repairman flourishing?

The past two years have seen a steady demand for the services of those unlikely looking shopfront windows plastered with signs printed out on A4 paper, one letter per sheet, proclaiming their skill at making, selling and repairing PCs and mobile phones. I wish I could explain their success fully.

Attitudes to computer repairs seem to be 'rather illogical, Captain', as *Star Trek's* Spock would have said. With quite powerful computers now available for about £300, you'd think it would be cheaper to buy a new one. Why would you keep a four-year-old steam-powered banger going? Any fix is unlikely to be permanent; something else will go wrong, and by the time you've fixed that and had another breakdown you'll have got rid of more of your money than a new machine would have cost. And anyway, the

expert Jonathan Zdziarski, iPhones are replacing notebooks and desktop computers among people who have an urgent need for mobility.

Zdziarski, who has to analyse computers belonging to criminals, loves the iPhone because "it's very, very popular with small-time drug dealers, who need something to work with in the field". And also because, for several reasons, it records all sorts of things you simply wouldn't believe, virtually permanently, in its memory – even if you think you've deleted them. But that's another story. For now, I think the lesson is that, very soon, many of the rest of us – who aren't drug dealers or criminals – will be seeing the virtue of having everything in a pocket, not on a desktop. Devices the size and shape of the iPhone will become commonplace.

But we will take a long time to dispense with PCs. They store huge amounts of data. We may not need it all, but we aren't ready, socially, to give it all to commercial data storage agencies or to delete it. And so PCs have to be kept going.

There is a better way. This is the time to look further into the future – dump the desktop and buy a modern multi-core laptop. They are just hitting the market; they use less power than you would believe; they are affordable in power costs; and they won't need to be repaired every three months, either.

The only problem is, they will still have to run one of today's scary, complex operating systems – and as long as they do that, ordinary people will still hire those guys from the corner shop every time they hit trouble they don't understand.

I hope you all got a good bargain in the post-Xmas sales and already have a laptop that will see you through the next two years. I hope also that you didn't get an extended warranty in the hope of avoiding repair problems because if you did you were probably done, whatever you paid for the PC.

Leaving aside the question of whether or not these warranties are a rip-off, you now have the risk that the company behind them might go bust. More retail failures are predicted, and computer resellers are no less vulnerable than other vendors. But your friendly local repairman could hit boom time. **PCW**

'The local repair shop has been flourishing longer than the economic downturn'

old one will drain your life savings away in electricity charges, while the new one will be better and cheaper to run.

But to someone with only £50 to spare, the cost of a new machine is irrelevant. You haven't got the money, so you spend what you can on repairs. This does not fully explain the rise of the local repair shop because it has been flourishing for longer than the economic downturn. There's another reason, and I think it has to do with increasing computer phobia – and that, I'm afraid, I attribute to the overweight operating system.

Consider the iPhone, which is of course a species of computer. It's got limitations (obvious ones as well as less obvious) and you certainly can't run Microsoft Word on it. But it's got access to all your contacts on the planet with email, it can surf the web, organise your appointments, and even keep your favourite tunes and videos for long journeys.

Now, I can think of a lot of reasons why you might not want to buy an iPhone and throw away your computer. The price was certainly a problem with the first model; the monthly cost is another. But, according to computer forensics

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Rescue your files

Has some of your personal data gone missing, been deleted or become damaged? Jason d'Allison explains how to get it back

Few things are more alarming than losing valuable data. We've all been there. Sometimes the loss is accidental – maybe you've deleted a bunch of holiday snaps in the mistaken belief that you've already backed them up. Sometimes the loss is sheer bad luck – perhaps a system crash has rendered Windows unbootable. And sometimes, sadly, the loss is malicious – certain viruses can be merciless in their destruction.

In this feature, we show you how to get this missing data back. Hard disks, USB memory sticks, even CDs and DVDs – there's a good chance you can salvage stuff from all of them. Where necessary we touch on commercial solutions, but the main focus is on tips and tools that won't cost you a penny. We're all feeling the pinch, after all.

Chiefly, this feature is aimed at users of Windows XP and Windows Vista (unless stated otherwise, everything we discuss is suitable for both), but don't worry if you're running something else – much of our advice is relevant no matter what your choice of operating system. We even squeeze in a mention for Linux – in these enlightened times, we'd never live it down if we didn't!

What a load of rubbish

It might seem obvious, but the first thing to do when files go Awol is to look in the Windows recycle bin. This is the holding place on your hard disk where all user-

deleted data goes before Windows junks it for good. By default, the recycle bin in Windows XP uses 10 per cent of each partition, up to a per-partition maximum of 3.99GB. The bin in Vista uses 10 per cent of each partition's initial 40GB, plus five per cent of any space thereafter. If your disk is one of those new 1.5TB units, it's possible you could be sitting on more than 75GB of deleted data.

To access the recycle bin, simply select its folder in Windows Explorer (alternatively, you can double-click its icon on the desktop). Restoring a file (or a whole folder) is just a

matter of right-clicking it and selecting Restore. Make a note of the file's original location, however, as that will also be the file's restore location – you don't want to find yourself on a hunting expedition.

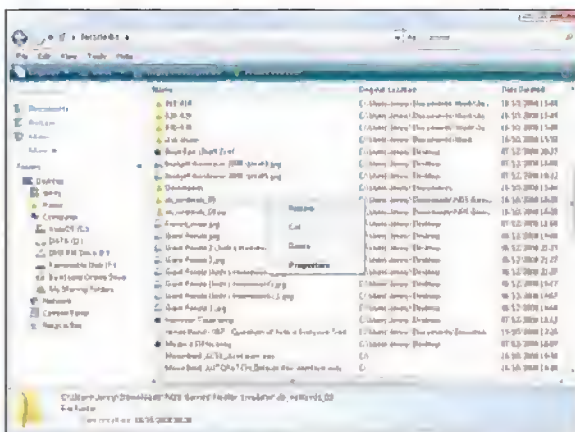
In Vista, if the original location isn't shown, right-click one of Explorer's column headings (Name or Size, for example) and select Original Location.

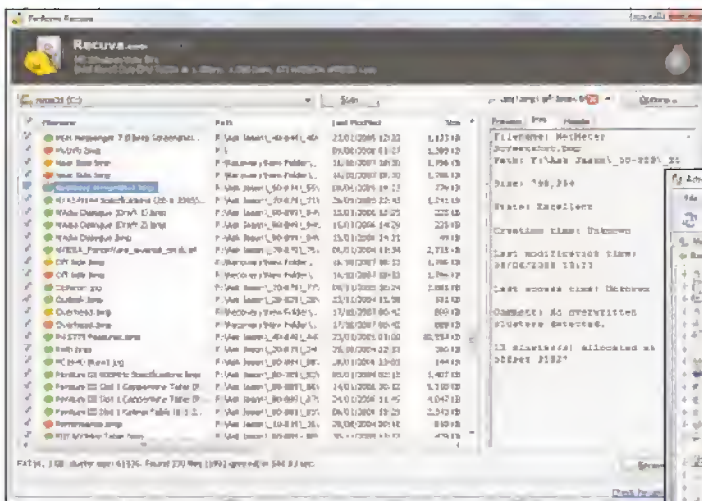
Files only drop out of the recycle bin – oldest files first – when there's no more room. It's therefore possible that every file you've deleted is still intact and available for recovery. Even so, if you want to make the bin bigger by expanding the size of your safety net, right-click the recycle bin's folder in Explorer and select Properties. In Windows XP, use the percentage sliders to increase the space either globally or per partition (no partition can donate more than 3.99GB). In Vista, use each partition's 'Maximum size (MB)' box to enter a new value (there are no limits).

Introduced in Windows 95, the recycle bin is a Godsend

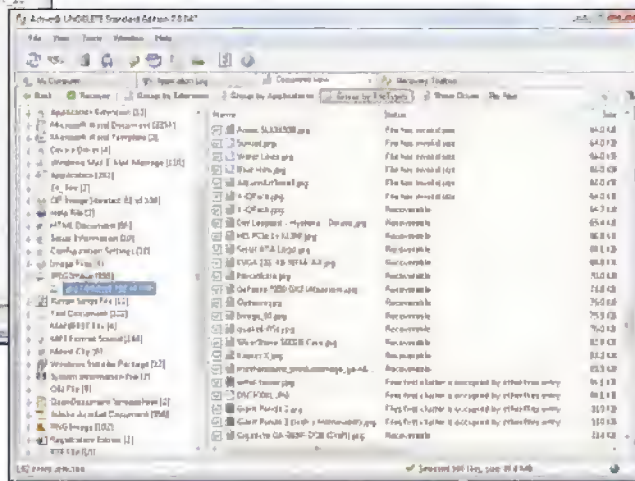


Image: Ian Taylor





Below: As Active@ Undelete appears to attest, shelling out money doesn't necessarily guarantee greater success



In the shadows

Owners of Windows Vista have another way of getting back old or deleted versions of files and folders. Shadow Copy is available on the Ultimate and Business editions, and maintains periodic snapshots of all files and folders on your hard disk. It does this daily or whenever a System Restore point is created: note that if you disable System Restore, this feature won't work. You also need to make sure that System Restore is enabled for all your local drives – choose Control Panel, System Maintenance, System then System Protection, then check the relevant disks. See page 35 for a step-by-step guide.

Only the differences between versions are stored, making it very efficient in terms of disk space. The beauty of it is that you can revert to previous versions of a file, or

Above: Recuva is just one of dozens of free data-recovery tools

recover lost files by browsing the previous versions of its containing folder. To access Shadow Copy, right-click on a file or folder and choose the Restore Previous Versions entry in the context menu. Choose the version of the file or folder you want to restore, then click either the Restore or Copy buttons. Of course, if you have files and folders that haven't changed for a long time, there may be no entries recorded, so it's no substitute for a proper backup.

For other Vista edition users, the good news is that Shadow Copy service is enabled on Vista Home Basic and Premium as well,

but it's not directly user-accessible. However, the free tool Shadow Explorer (www.shadowexplorer.com) fixes this and enables you to make use of the feature.

Unfortunately, the only files that go to the recycle bin are those deleted from hard disks. Nothing goes there from sources such as memory cards and USB memory sticks. The bin won't help you if you've lost files through virus infection or file-system corruption, either. Nor will it help you if you've recently emptied it.

Thankfully, it's not game over – far from it. There are numerous programs available to assist in raising data from the dead, and many of them are free. Take Recuva (www.pcw.co.uk/2187036), for example. Except for CDs and floppies, this will try to restore deleted files from almost anything – even MP3 players.

Like all undelete tools, Recuva works on the principle that deleted files often don't get erased – even if the host disk or device has

been formatted. The file system merely marks the files' locations as free for use – the data will only be truly wiped when those locations get overwritten.

As soon as you realise you're in trouble, immediately stop using the disk or device the files are stored on. Avoid installing any recovery tools there, too, as you might overwrite the very data you're hoping to restore. If the files are on your main hard disk, you may need to connect it

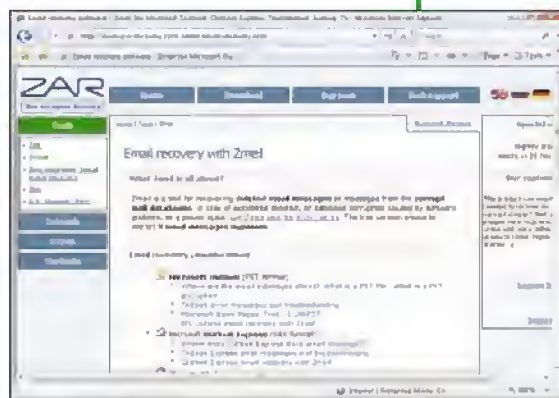
temporarily to another PC. A USB drive caddy costing around £10 is a handy device for this purpose.

Email of the species

What about deleted emails? Can they be recovered? Well, in general, emails are stored not as individual files but as entries in a huge database. When an email gets deleted, its entry in that database remains intact – it's merely tagged with a deletion flag, ensuring the email no longer gets displayed. Flagged emails are only blitzed for good when the database is compacted (to reclaim disk space or improve the email program's performance). This is a manual process that most users never undertake.

There are plenty of utilities available that will reset deletion flags, but we're not aware of any that are free. Take a look at Zmail (www.z-a-recovery.com), priced at \$19.95 (£14), which works with databases from Outlook, Outlook Express and Thunderbird. Also consider Disk Internals Mail Recovery (www.diskinternals.com). At \$99.95, this is significantly more expensive,

but it can also handle emails deleted from Windows Mail and Window Live Mail. Thankfully, there's a free trial.



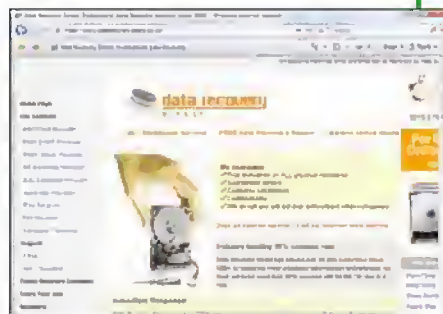
If you need to recover deleted emails, you'll probably have to pay for it

Emergency services

Subjecting your hard disk to recovery software is only sensible if it's in good health. If it's rattling like a train or exhibiting some other hardware fault (in severe cases, of course, your PC might not even recognise its presence), further use could cause additional damage. This is when you need a specialist, a company that will operate on the disk in a clean room.

One such specialist – there are several others – is Data Recovery Direct (www.drd-uk.com). This gives quotes of between £294 (for a 40GB disk) and £742 (for a disk over 500GB) – steep but typical. Worth investigating, though, is Rapid Data Recovery (www.rapid-data.net), which, with prices starting from £112, claims to offer the cheapest salvage service in the UK. It

also tackles unreadable memory cards and USB sticks. For recovery of damaged optical media, try US company Acodisc (www.acodisc.com).



Deep pockets are required if you need to ship your hard disk to a clean room

The easiest way to use Recuva is by working through the wizard. With this, you can specify what to scan for (such as picture, documents, or anything) as well as where to look (such as on a USB memory stick, in a given folder, or everywhere). If the scan fails to unearth what you're after, try again but with a Deep Scan (which could take ages).

'Sadly, most file-recovery utilities can't deal with optical media – CDs, etc'

If you need more options – perhaps the ability to scan for files with specific extensions (.mp3, for example) – skip the wizard and use the program's full interface.

When a scan completes, you're shown a list of files, each with one of three traffic lights: green means the file should be fully recoverable; amber means the file might be partially recoverable; and red means the file is probably lost. Orange and red files will have been partly or totally overwritten. To proceed, just tick the files you want, click Recover, and choose a save destination (make sure this is not on the disk or device the files are being recovered from).

No free lunch?

Recuva is one of the best tools of its kind. Even so, if it doesn't do the business for you, give one of the following a whirl: Soft Perfect File Recovery (www.softperfect.com); Glary Undelete (www.glarysoft.com); and PC Inspector File Recovery (www.pcinspector.de). There's also a wealth of other free recovery software available from PCW's own downloads portal (www.pcw.co.uk/downloads).

While it's not quick, Iso Buster can sometimes retrieve data from CDs and DVDs that Windows won't even look at

were described as Recoverable and 111 were labelled with a variety of brief damage reports. Disappointingly, we could open only 235 of the green files – a colossal 193 were duff. Eight of the damaged files opened, though.

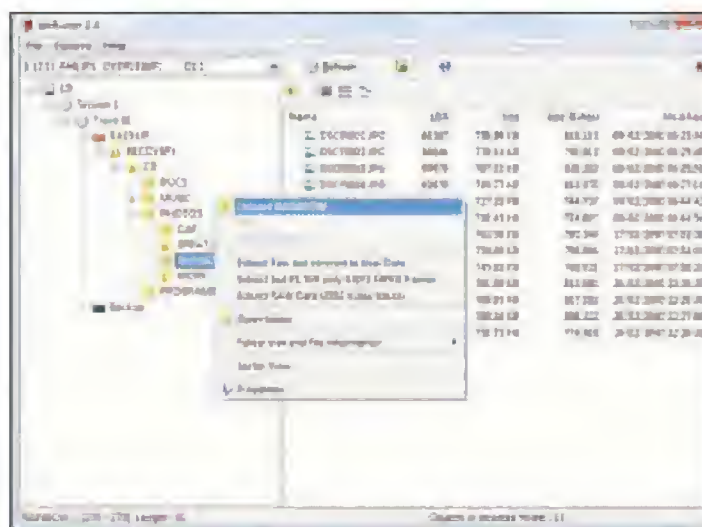
Other commercial tools might give better mileage, of course, but on balance Active@ Undelete left us a bit underwhelmed. Its recovery score was 243, while Recuva's was 282. That's quite a difference. Is it worth \$39.99 (about £28)? For basic file recovery, you're probably best keeping your cash in your pocket.

For non-basic stuff, though, Active@ Undelete has a neat trick: it can scan not only for complete files but also for orphaned data patterns. So if your file system is severely trashed, the program can unearth files that no longer even have records – no names, no sizes and so on. The Professional version (\$54.95) can also restore deleted partitions, while the Enterprise edition (\$79.95) adds the ability to rebuild RAID configurations and recover data from remote network drives, including network-attached storage (Nas) boxes.

In a spin

Sadly, most file-recovery utilities can't deal with optical media – CDs, DVDs and so on. That's largely because optical discs use different file systems to devices such as hard disks and USB sticks (ISO 9660 or UDF, typically, instead of Fat 16, Fat 32, or NTFS). There are plenty of specialist tools available, however. Have a crack at CD Recovery Toolbox Free (www.pcw.co.uk/2185399) and Iso Buster (www.pcw.co.uk/2152189).

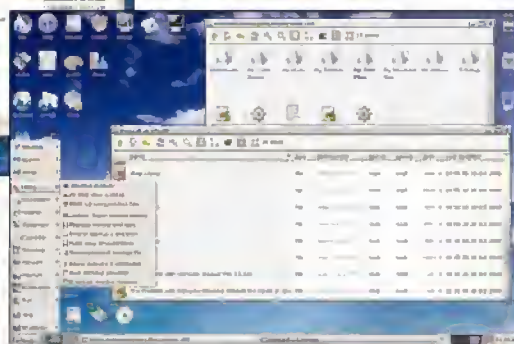
We tried Iso Buster. We took a CD-R containing 250MB of data and used a screwdriver to give it some impressive scratches. Windows wouldn't read the disc at all, but Iso Buster successfully inspected the file system and then displayed a list of files and folders. We put a tick against the lot,





Left: UBCD4Win is a utility-packed implementation of Windows XP that runs straight from CD

Below: Puppy Linux might be less than 100MB in size but it's no dog



right-clicked, and selected Extract Objects. After 12 hours, though, the process was less than 25 per cent complete, so we clicked Cancel and chose instead to rescue only the CD's 13 photos. This scan took about 90 minutes: three of the photos safely saved to disk were readable (one had corruption).

We tried the same test with Active@ Undelete 7.0 (one of the few utilities to offer both disk-based and optical-based recovery). This found the CD's main title but nothing else, and CD Recovery Toolbox Free fared no better. If you're having no joy at all, start again after trying to fix some of the major damage on the disc. For advice on doing that, see our Workshop on page 36.

Ultimate edition

Have you ever switched on your PC and found that Windows no longer boots? Most likely, the only damage is to the Windows boot loader or master boot record. If you connect your hard disk to another PC, you'll be able to salvage your files from there.

However, if attacking your PC with a screwdriver doesn't appeal, the answer is UBCD4Win – the Ultimate Boot CD for Windows. This contains its own cut-down installation of Windows XP. It runs directly from the CD, bypassing your hard disk, so it's no matter if your usual Windows installation is broken. Using one of the included file managers, you'll be able to copy your files to a memory stick, external disk, or DVD.

To get started, download UBCD4Win's builder (www.pcw.co.uk/2224907). This is what creates the CD – just follow the instructions. You will need an XP setup CD, though. If all you've got is a manufacturer's recovery CD, borrow a full disc from a friend (providing you've got an appropriate XP licence, this is perfectly legal). Also, if your own PC is out of commission, you'll need to run the builder on someone else's.

Once you boot up with UBCD4Win (remember to configure your Bios so your PC boots up first from the CD and not the hard disk), you'll see the familiar XP desktop.

There are more than 150 programs, all free for non-commercial use. Crucially, you've got a suite of software for recovering deleted files. There are also tools for fixing Windows start-up problems (MbrFix, for example).

Doing it live

One snag with UBCD4Win is that it's only intended for users of Windows XP. You can

still use it if you're running Vista – though you should avoid trying any of the boot-repair tools – but to stay legal you need to own an XP licence. If you don't have one, try Vista-based Vista PE (<http://vistape.net>) or Microsoft's Windows PE (www.snipurl.com/3k96k). There's also a Linux-based version of the Ultimate Boot CD available at www.ultimatebootcd.com – it includes tools to read and write files on Windows NTFS hard disks.

An option with no licence restrictions is Linux. There are hundreds of live distributions available. These work similarly to UBCD4Win – they run directly from CD and don't need to be installed. Any included file-recovery tools won't work, as they'll be designed for Linux's own file systems (ext 3, Reiser FS, etc), but you'll have no difficulty backing up undamaged data from a shafted Windows installation.

Almost any Linux distribution will suffice, but for recovery purposes you're better off downloading one of the small, frugal offerings – they're quick to download and quick to run. Try Puppy Linux (www.puppylinux.org) or Damn Small Linux (<http://damnsmalllinux.org>) – or both. Just be careful: experimenting with different Linux distros can quickly become addictive.

Prevention is better than cure

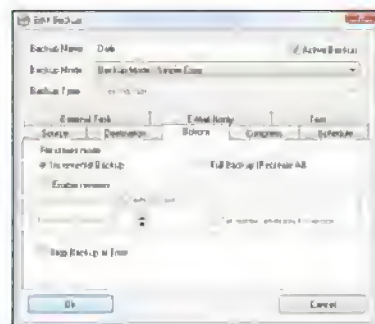
The best way to avoid losing data in the first place is to back up. One option is to create a sector-by-sector snapshot of your entire hard disk. If the disk subsequently fails or you're the victim of a catastrophic virus attack, you can have your Windows installation, applications and settings all up and running again in minutes – exactly as they were when you made the snapshot.

If you're running Windows Vista Ultimate, a solid snapshot tool is part of the Backup and Restore Center. If you're running something else, however, the

best-in-class commercial product is generally held to be Acronis True Image, version 10 of which is helpfully included on this month's cover disc. The best free alternative is probably SelfImage (<http://selfimage.exceldia.org>).

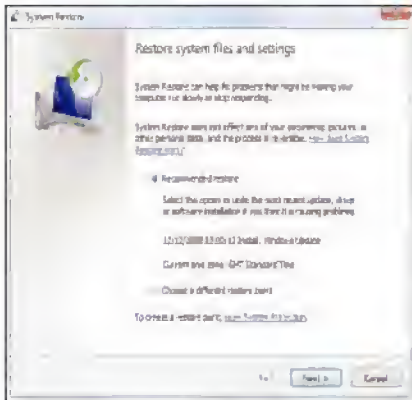
On a day-to-day basis, you'll want software that backs up incrementally – software that backs up all your files on its first run but which then only backs up files that have been added or changed. Again, Vista can do this. In XP, there's Windows Backup, though if you're a Home user you'll need to install it manually from your setup CD – look for Ntbackup.msi under the folder \Valueadd\Microsoft\Ntbackup. Comodo BackUp (www.pcw.co.uk/2224504) is a good free option.

Nowadays, you can back up online, too. The advantage is that your backups are safe from damage, corruption and theft – everything's stored on robust, remote servers. One of the leading providers is Carbonite (www.carbonite.com), offering unlimited storage for \$49.95 (£34) per year. Also consider iDrive (www.idrive.com) and Mozy Home (<http://mozy.com>), both of which give 2GB of storage free.

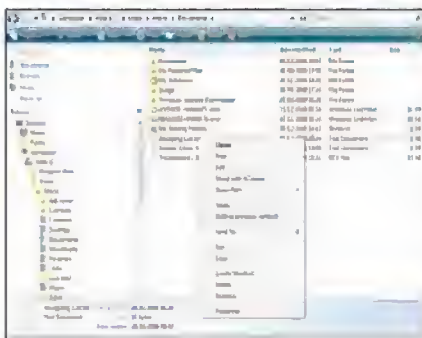


As Comodo proves, good backup software needn't cost you the earth

How to use Windows Vista's Shadow Copy



(see Prevention Is Better Than Cure) and is also the backbone of System Restore. Indeed, Shadow Copy and System Restore could be seen as two sides of the same coin. To open System Restore, click Start, type 'system restore' in the Search box, then click the top link in the results list.

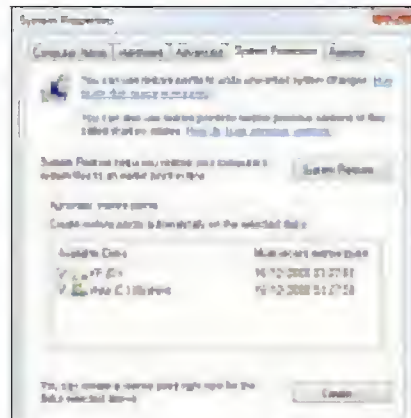


automatically or manually), you can go back in time, reclaiming what you've lost. To do this, right-click the given file (or folder) in Windows Explorer and select 'Restore previous versions'. Up will pop a tab called Previous Versions that lists all copies of the file that are available. If you've made backups using the Backup and Restore Center, all backed-up copies of the file will be listed, too.



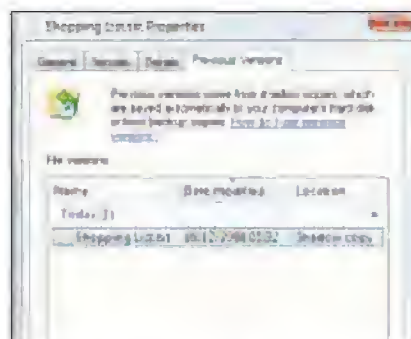
really it's not – Shadow Copy still exists and still quietly makes backups of your files whenever a restore point is created. The only difference is that the means of accessing those backups has been removed. Luckily, there's a neat little tool you can download called Shadow Explorer (www.shadowexplorer.com), which gives that access back.

1 Shadow Copy (or as it's sometimes called, the Volume Snapshot Service) is quite likely something you've never heard of. For the most part, it works silently in the background, but that makes it no less fundamental to several of Windows' core features. For example, it's used by the Backup and Restore Center



files aren't protected, however – that's where Shadow Copy comes in. At every restore point, Shadow Copy makes backups of almost all the files on your PC. Clearly, for this to work, System Restore needs to be enabled. Click the 'open System Protection' link and ensure ticks are beside the appropriate disk partitions.

3 Shadow Copy enables you to revert to previous versions of your data files. Say you've edited a photo and clicked Save instead of Save As, wiping out the original. As long as a restore point was made prior to the change (either

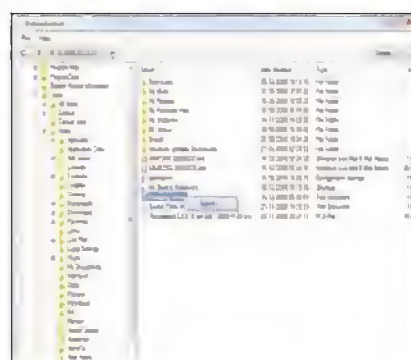


overwrite the version of the file that currently exists. This can't be reversed. If you want to retain both the previous version and the current one, click Copy and save the previous version to a fresh location. If you prefer, you can also drag the desired file off the Previous Versions tab and into a location of your choice in Windows Explorer.

2 As you're no doubt aware, System Restore enables you to roll back changes made to system files. Restore points are created automatically every 24 hours, or whenever you install Windows updates, new software, or non-WHQL drivers. You can also create restore points manually. Personal

4 If you're presented with multiple versions of the same file, you can use the Open button to examine them in turn. Once you've found the one you're after, highlight it and click Restore. It's important to remember, however, that doing that will

5 Unfortunately, there's a gotcha: the Previous Versions tab is only available if you're running Vista Ultimate, Business, or Enterprise. It's not present in Vista Home Basic or Home Premium, easily Vista's most popular editions. That sounds like bad news, but



6 Shadow Explorer works in a similar fashion to Windows Explorer: in the left-hand pane is the system's folder structure and in the right-hand pane are the contents of the currently selected folder. At the top are dropdown menus for choosing the partition and restore point you

want to view. In addition to restoring previous versions, you can restore files that you've now deleted (this is possible via the Previous Versions tab, too, by searching for the deleted files in the copies of the folders where they originally resided). To restore a file, right-click it, select Export, then choose a save location.

How to repair optical discs

CDs and DVDs are surprisingly tolerant of abuse, but there comes a time when your game, audio or movie discs simply won't play at all due to dirt or scratches. Here's how to repair minor glitches



1 In many cases discs can't be read simply due to an accumulation of dirt, grease and scuff marks caused by careless handling, as in the image above. This stops the laser in the CD/DVD player being able to read the data through the transparent plastic layer that's on the data side of the disc. Luckily, light scratches and abrasions on the data side of a disc can usually be repaired. However, scratches on the label side of a disc (see picture above right) are irreparable.



2 The first thing to try when you're having disc problems – even if you think they're caused by a scratch or scuff mark – is a simple clean. Cleaning and lightly polishing the play side of a disc is often all that's needed. Inexpensive kits, such as Maplin's CD & DVD Cleaner & Restorer Polish (£4.99 from www.maplin.co.uk), work well, but there are plenty of others. Don't be tempted to wash the disc with detergent or tap water as you could make the problem worse, or even damage the label side.



3 The Maplin kit contains a cleaning spray of isopropyl alcohol that you spray onto the play side of the disc. You should never use household cleaners or abrasives. After 30 seconds or so the alcohol dissolves grease and grime, and you then simply wipe it off with the circular chamois pad. Alternatively, you can use a clean, dry lint-free cloth. It's very important to wipe the disc from the centre to the outside – don't wipe it in a circular motion as this can make matters worse.



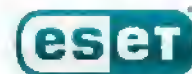
4 If cleaning doesn't fix the problems, polishing is the next stage. The Maplin kit contains polish plus an application cloth and chamois. Apply a few drops of the special polish and rub it in radially with the cloth, let it dry and then buff the disc with the chamois. This will restore most light scuffs and abrasions. For deeper scratches you might need to resort to a cleaner such as the Skip Dr (around £14). This is a contraption that uses distilled water and a special resurfacing wheel that rubs the disc radially.



5 After spraying the disc with the cleaning fluid, pop it into the Skip Dr and turn the handle clockwise until the disc has turned through a complete revolution. Take it out, spray it again and repeat the process. Afterwards take the disc out and dry it with the microfiber cloth provided. You need to use the small buffing pad supplied to polish the disc. When buffing, make sure the disc is resting on a clean, soft surface. If the disc is badly scuffed you might need to repeat this process.



6 If none of these tips works, it's time for desperate measures. Brasso metal polish has been used for polishing plastic for many years, and it does work although it's a bit smelly. Using either the wadding version or liquid with a soft cloth, rub the offending scratches with Brasso in a radial direction from the centre of the disc until they smooth out. Let the Brasso dry before polishing it off with a microfiber cloth. If you can feel a scratch with your nail, then you probably won't be able to fix it.



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Netbook know-how

Miniature laptops may be small, but they are capable of much more than meets the eye, as Will Stapley discovers

When the first Eee PC arrived in 2007, it caused quite a stir, but few would have predicted just how popular netbooks would become. With models from big names such as Dell, HP, Samsung and Toshiba, there's no shortage to choose from and it's quite likely many of you picked one up for Christmas.

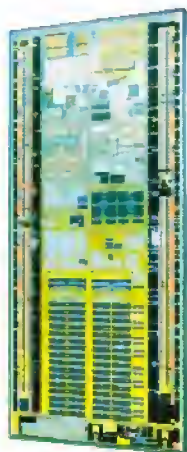
Rather than offering powerful processors, long battery life and a wealth of features, netbooks provide modest performance in an ultra-compact chassis. In this feature, we'll show you what to look out for when buying a netbook and, once you've got one, how to get the most out of it. We'll also take you through the must-have accessories for any netbook owner.

The processor

Given their low prices and small dimensions, it should come as no surprise that netbooks aren't the most powerful of laptops. But with most models coming in a variety of flavours, there are a number of choices you need to make. In contrast to buying a standard laptop, the choice of processor is actually very limited when purchasing.

While fully fledged laptops usually run fast dual-core AMD or Intel processors, netbooks have to be slightly more conservative in order to keep their prices down. Intel is currently leading the netbook processor charge with its N270 Atom processor. Based on a 45nm fabrication process and used by the vast majority of netbooks, the Atom is small and relatively power-efficient with a 2.5W thermal design point (TDP). Its core speed of 1.6GHz isn't going to win any performance awards, but neither is it particularly slow – it's powerful enough to cope with what netbooks are intended for. It's not all about Intel, though, with Via offering its C7-M processor; HP's Mininote 2133 is one netbook that runs off this processor, with a core speed of 1.2GHz.

As with most laptops, upgrading the processor on a netbook isn't possible, neither is any serious amount of overclocking. However, Intel recently revealed plans for its



Intel's 45nm Atom is currently the most popular netbook processor

netbook CPU line-up, with 32nm chips expected to arrive in 2010 (see www.pcw.co.uk/2232173 for more information).

Memory matters

Given the relatively small amount of processing power, most netbooks make do with either 512MB or 1GB of Ram, and if you stick to basic applications it is unlikely you'll need any more. However, if you

start pushing your netbook by multitasking or running memory-hungry applications, you might find it starts to complain. How easy it is to upgrade the memory will depend on your netbook – some just require a small panel to be removed, others need a bit more work. It's also worth checking whether upgrading the memory voids your warranty; early Asus models had a sticker warning against installing more memory, but the company then bowed to consumer pressure and said the warranty wouldn't be affected. If you decide your netbook does need a memory upgrade, and you either get the green light from the manufacturer or don't care about the warranty, you should first find out how many Sodimm slots your netbook has. Many only have one, which will already be occupied. If so, you'll need to discard the current memory and, for example, buy a single 1GB stick to replace it.

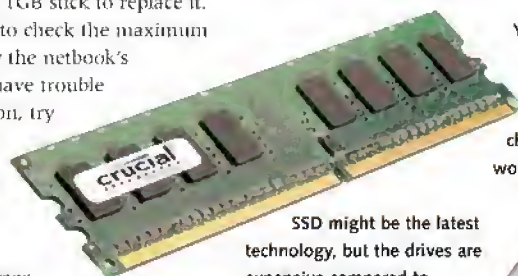
It's also important to check the maximum memory supported by the netbook's motherboard. If you have trouble finding this information, try Crucial's Memory Advisor tool at www.crucial.com/uk.

Store more

When it comes to storage, netbooks either feature a traditional hard disk or a solid-state drive (SSD). Using Flash memory, SSDs have no moving parts and are therefore more durable than standard hard disks. Another advantage of SSD,

though one that's up for debate, is speed. A netbook with an SSD will, in general, boot faster than a traditional hard disk-based model, but it all depends on the make and model of the hard disk – some can give SSDs a run for their money. At present, the main drawback of SSDs is their price per gigabyte. For example, an Acer Aspire One with an 8GB SSD can be purchased for around £199, but for the same price you can get the same Aspire One with a relatively gargantuan 120GB hard disk – we know which we'd prefer.

Of course, you can always boost the storage of your netbook at a later stage. Even with a 120GB hard disk, if you use it for more than just surfing the web and emailing it won't take long before you've eaten up all the storage. The neatest way to add more



You can boost the memory of most netbooks, but be sure to check the warranty won't be invalidated

SSD might be the latest technology, but the drives are expensive compared to traditional hard disks





storage is to upgrade the hard drive itself, but

depending on the make of your netbook this might be either tricky or almost impossible. It's therefore far easier to use some form of external storage, such as a USB hard drive. A 160GB USB hard drive costs around £60 and most will draw all the power they need from the USB port, so you won't need to drag around a separate power supply.

Operating system

Perhaps the biggest decision to make when purchasing a netbook is which operating system to choose. Being free and with relatively low hardware requirements, Linux is an obvious choice for a low-cost

netbook. With a wide selection of free applications such as Open Office and Mozilla, Linux is able to cater for most netbook users' needs.

Some netbooks come with their own, tailored versions of Linux distributions, but you can always download and install new

applications. Although this requires a bit of Linux knowledge, there are plenty of online resources to help you out (the forums at www.linuxforums.org are a good place to start and there are plenty of other model-specific forums around).

Certain netbooks are only available with Linux, while with others you have the option of choosing Windows XP when you purchase – obviously, the latter

is more costly. Which operating

system suits you best will depend on your needs. Those wanting to do little more than word process, browse the internet and send emails should be happy with a Linux operating system – it won't look quite as pretty as XP, but it gets the job done.

However, if you want to install a lot of third-party software and don't want any driver problems when adding hardware, XP is a safe choice. Needless to say, the current crop of netbooks balk at the hardware requirements of Windows Vista and, unless you're happy with a slow netbook, we wouldn't recommend trying to install it.

It is possible to install a different operating system (either Linux-based or XP) onto a netbook, but it isn't always plain sailing. We've had readers emailing in saying that it's difficult to revert the netbook to its original state, with the second operating system clinging onto disk space and not letting go. If you want to install a new operating system, it's worth considering going down the virtualisation route. It might sound a little daunting, but virtualisation is easy and there are various free packages available (see Virtual OS box, right).

Battery life

Despite not being particularly powerful and only having to illuminate relatively small screens, netbooks often

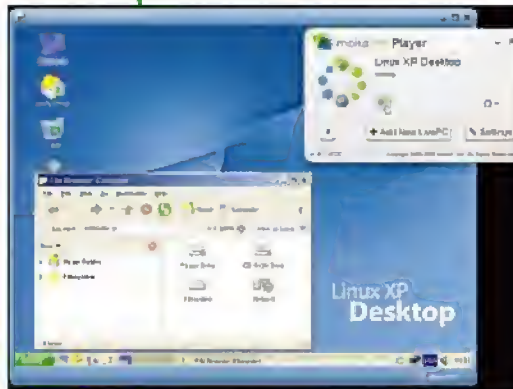
The Asus Eee PC is small and quick

The virtual OS route

If you want to install a new operating system on your netbook, it's worth trying it out first using virtualisation. A virtual operating system will act in exactly the same way as a physical one, but it will be completely independent, so it won't affect your primary operating system or any of the data on your netbook. This way, if you later decide it's not for you, you can quickly get rid of it, without any lasting effects.

There are a variety of free virtualisation applications available, with Mokafive being a good example. The great thing about it is that it can be run directly from a USB key, allowing you to simply plug the key into your netbook and then run the new operating system without having to install or set up anything.

To give it a go, you'll need a USB drive with at least 4GB of space for optimal use. Head to www.mokafive.com, click on the Solutions tab and then download 'Player for USB drives' and save the file to your USB drive. Next, run the installation program directly from the USB drive – after a short wait, the Mokafive Player will appear. A great feature is that it's able to download operating systems directly from the web – either ones you've created yourself or public operating systems. The Linux XP Desktop comes loaded by default, and all you need to do is click on the green arrow to launch the operating system. Of course, if you want to run a commercial operating system, you'll need a valid licence key. You can read more about Mokafive, and virtualisation in general, at www.pcw.co.uk/2206142.



Virtualisation lets you try out new operating systems without permanently affecting your netbook

DO MORE WITH YOUR NETBOOK

struggle when it comes to battery life and you'll be lucky to get more than a couple of hours' usage from a single charge. It's best to steer clear of three-cell batteries and instead opt for six-cell versions. Also, take manufacturers' quoted battery life times with a pinch of salt. Hunt around for reviews (there are plenty at www.pcw.co.uk) to find out what real-life performance away from the mains is like. You can always maximise battery life by switching off Wifi when it's not in use, dimming the screen and tweaking the power settings in XP, if applicable.

Manufacturers are well aware of the importance of battery life, and Qualcomm recently showed off a netbook it claims can run for more than a working day – see www.pcw.co.uk/2231889.

Usability

If there's one common complaint about netbooks, it's poor usability, especially with the smaller models such as the 7in Asus Eee PC. Although impressive in terms of size, the keyboard is

difficult to type on at speed and almost impossible to type on at all for those with large fingers. If possible, we'd always recommend trying out the keyboard on your chosen netbook before you purchase.

Sadly, there's not much you can do about the size of a netbook's keyboard after you've purchased it, but if you plan to use it at home or in the office it's worth investing in a separate USB keyboard. The same goes for the trackpad, which is usually crammed into a pitifully small area on a netbook. Even a small external mouse will make a big difference, and it's something you can carry around easily.

Screen issues

If you're used to a 15in laptop screen or an even larger desktop screen, stepping down to 10in or smaller can be something of a struggle. Although cheap, those with a 7in screen really are pushing the boundaries of

It's a good idea to try out the keyboard for size before you buy

usability – for example, the 7in Asus Eee PC has a resolution of just 800x480, making it feel quite claustrophobic.

Unless portability is your only consideration, we'd recommend opting for a netbook with either a 9in or 10in screen – although even at these sizes you'll do well to get more than one window on the screen at any one time.

There are, however, a few ways in which you can maximise the space on your desktop. If you're using XP, a quick way to reclaim a bit of desktop space is to set the taskbar to hide when not in use (right-click the taskbar, select Properties and then tick the Auto-hide box).

Another tip is to remove unnecessary menu bars in applications such as your word processor and web browser, or simply run in full-screen mode (often activated by pressing F11). When viewing websites or reading documents, you might also find it easier to change the orientation of the screen to portrait. On Acer's Aspire One, for example, you can do this by pressing Ctrl & Alt and either the left or right arrow key.

But, as with the keyboard, the only real way to get a noticeable boost is to invest in

Accessorise your netbook

They work fine by themselves, but invest in a few accessories and your netbook will thank you for it. Here's our pick of the bunch.

Buffalo DVSM-P58U2

£59

www.buffalo-technology.com

Available in both black and white, this slim DVD burner is the perfect companion for your netbook. It weighs just 360g, draws all the power it needs from a USB port and will write to DVDs at eight-speed and CDs at 24-speed.

Western Digital's My Passport Essential hard drive is available from 250GB to 500GB

Western Digital My Passport Essential

£69 (250GB)

www.wdc.com

Powered entirely by USB, this hard drive is available from 250GB up to 500GB and comes in a variety of colours. It can also synchronise files with a Windows-based netbook and encrypts them for protection during transit.

Logitech Alto Cordless

£69

www.logitech.com

Even 10in netbooks are uncomfortable to type on for extended periods. Logitech's Alto Cordless not only provides a stand to raise the height of the screen, but also comes with a full-size wireless keyboard and features three USB ports – perfect when using your netbook at home or in the office.

Belkin Flex Hub

£15

www.belkin.com

If you're running out of USB ports, this nifty little four-port USB hub will help you out. Since you need to plug it into an existing USB port, you only get three extra ports, but that should be enough for most.



Belkin's useful USB hub gives you four ports in a storm

Mogo Bluetooth Adapter

£10

www.newtonperipherals.com

Small and compact, this tiny USB device will equip your netbook with Bluetooth, allowing it to sync with your mobile phone and other devices. At just £10, it's a great way to boost the functionality of your netbook and it's so small you'll barely notice it.

Pakuma Choroka K4

www.pakuma.com

£29.99

The last thing you'd want is for your beloved netbook to be damaged in a fall. The Choroka K4 from Pakuma is specifically designed for netbooks and is available in both 7in and 10in versions. With high-density foam inside, it will keep your netbook safe and secure while travelling.

Mogo's Bluetooth Adapter boosts functionality at a bargain price



The Logitech Alto Cordless has a full-size wireless keyboard



Mobile broadband and netbooks go hand in hand

an external monitor for use at home or work.

Peripheral purchases

Chunky and a big draw on power, optical drives don't really go hand in hand with the netbook movement, and you won't find one included on any with a 10in screen or smaller. However, if you want to install some software quickly it can be a real pain having to use a desktop PC to copy the files onto a USB key. A far better solution is to buy an external optical drive – these are actually much cheaper than you might think, at around £50, and are also extremely slim.

If you're planning to attach various bits and bobs via USB, it's worth picking a netbook with at least three USB ports. However, if you start attaching an external keyboard, mouse, hard drive and more, even this won't be enough, and means you will have to purchase a USB hub. Such devices are very cheap, as you'll see in our peripherals box on the previous page, but you may find you need a powered one (ie one that has its own mains power supply) if you're running multiple devices at the same time.

Broadband on the go

Previously very expensive and, as a result, used by very few people, mobile broadband has been one of the biggest beneficiaries of the netbook revolution. Although most netbooks have built-in Wi-Fi, which lets you access the internet from home and when near a public hotspot, their portable nature means they're absolutely perfect for accessing broadband on the go. And thanks to the increased demand, mobile broadband is now cheaper than ever before, with deals from as little as £10 per month. If you do sign up to one of the cheaper deals, be wary about downloading large updates, such as Windows service packs, as they might push you over your monthly data cap. Instead, save all major downloads for when your netbook is in reach of your home or office wireless network. If you're yet to purchase a netbook, you might find it's worth your while signing up to a mobile broadband contract and getting a netbook for free – take a look at our 'Netbooks for nowt' box above for more information.

Whether you're running Linux or XP, there's no reason to stick with the

Netbooks for nowt

If you're looking for both a netbook and mobile broadband, consider combining the two and getting the netbook for free. Your choice of netbooks will be limited, and you'll be tied into a fairly long contract, but you can save a fair bit of cash.

If you're willing to sign up to a two-year contract, T-Mobile (£25/month) and 3 (£20/month) are offering the original Asus Eee PC 701 free. Both also have the Elonex Webbook available, as do Orange (£25/month), for a similar two-year contract. Meanwhile, Toshiba's NB100 is available on 3, T-Mobile, Orange and O2, although all require at least a two-year £30 a month contract.

There are plenty of other free netbook deals – check out the mobile operators' websites as well as stores such as Carphone Warehouse (www.carphonewarehouse.com) and Phones4U (www.phones4u.co.uk).

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ASUS 501 Eee PC with mobile broadband for £24 a month

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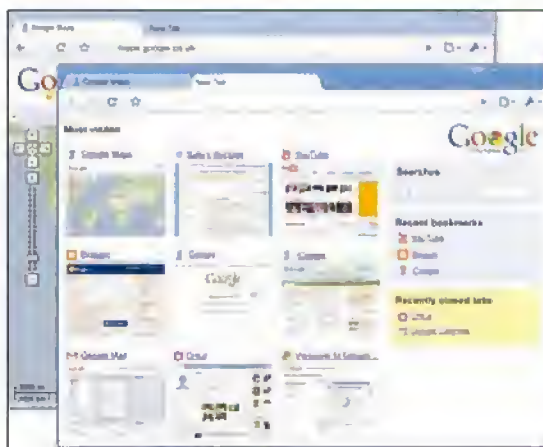
Orange mobile broadband

monthly usage 3GB

contract length 24 months

cost £24 a month

If you sign up to a mobile broadband contract, you can bag a netbook free



Google Chrome is a small, fast browser that works well with netbooks

If you're suffering from dropped frames when watching video using Windows Media Player, VLC (www.videolan.org/vlc) is an excellent freeware alternative. As it takes up far fewer resources, there's a good chance it will solve your video woes.

Don't forget that there are also plenty of online applications, which will take the strain off your netbook altogether. Google Docs (www.google.com/docs) is perhaps the best known free online word processor, while Zoho Office (www.zoho.com) has a wide range of applications that are free for personal use.

The future of netbooks

As we've shown here, although netbooks aren't nearly as powerful as traditional laptops, there's no reason they can't be tweaked and upgraded to meet your needs. And with the netbook revolution showing no signs of slowing down, manufacturers are clambering over themselves to release new models with greater power and more features. As we mentioned earlier, Intel recently announced its netbook processor roadmap, while AMD is also likely to enter the frame. However, unlike with standard laptops, manufacturers are under extreme pressure to keep the price and dimensions of netbooks small – after all, that's the sole reason they're so popular. **PCW**

software that comes pre-installed with your netbook. A prime example is the web browser. Internet Explorer and, to a lesser extent, Mozilla can both place quite a strain on your netbook's limited resources. Consider downloading Google Chrome (www.google.com/chrome) – it might not be the most feature-rich browser and some websites don't appear quite as well as on other browsers, but it's very fast and perfectly suited to netbooks.

In terms of office software, you can't get much more efficient than Open Office (www.openoffice.org), which usually comes pre-installed with Linux netbooks. If you're running XP, ditch any free trials of Microsoft Office and switch to Open Office – your netbook will thank you for it.

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Seventh heaven

Tim Anderson takes a sneak peek at Windows 7, which is due to launch in 12 months' time. Will it be worth the wait?

Even at this early stage, two Windows 7 predictions seem safe. First, it will be better liked than Windows Vista, which has become a PR disaster for Microsoft thanks to poor early experiences for many users. Second, naysayers will say that Windows 7 is merely Vista reheated – and they have a case. Even Microsoft says that the core architecture is unchanged, and the pre-beta code reviewed here is suspiciously stable. The new features are generally low key, and the company is betting that users would rather have an operating system that's familiar but smoother and less annoying rather than one that rewrites the Windows rules yet again.

When will we get Windows 7? Microsoft has not announced an exact date, though the company says it will be around three years after Vista, which launched in January 2007. That would mean early 2010, but given the pressure on Microsoft to move on from Vista, and the high quality of the current builds, most observers think it will be sooner.

The first feature-complete public beta launched recently and, all going well we

could see PCs pre-loaded with Windows 7 on the shelves in autumn 2009. That would mean getting the final code to PC vendors in the summer, which is an accelerated schedule but looks plausible based on what we have seen.

Damage limitation

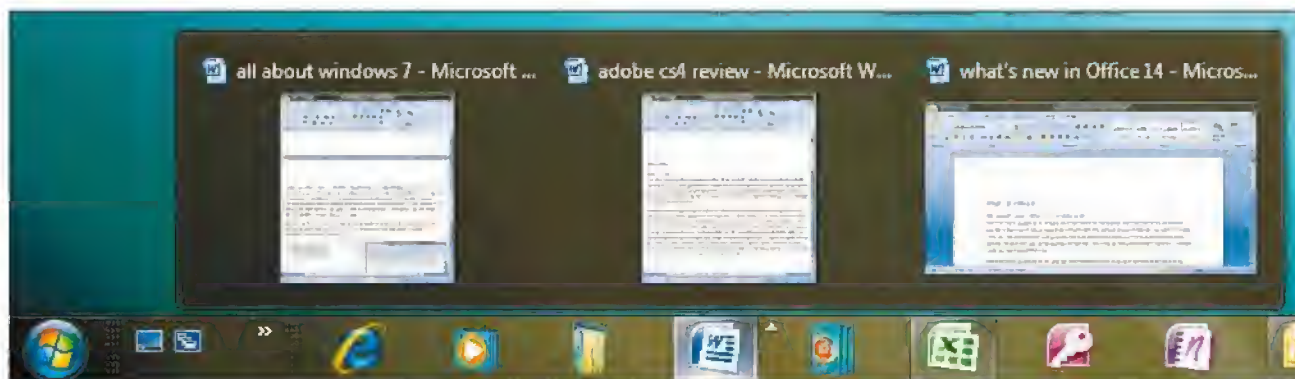
Windows 7 was unveiled at Microsoft's Professional Developers Conference (PDC) in Los Angeles late in 2008. Reviewers got loan machines with a preview build pre-installed. Some of the new features were not enabled in this build, including the new taskbar, so we also tried one of Microsoft's internal builds, which is closer to what will eventually be shipped. Windows 7 includes Internet Explorer 8, but this is not covered in detail below since it is a separate product that will also be available for Windows XP and Vista.

Two factors strongly influence Windows 7. One is the poor reception given to Windows Vista, launched under the slogan 'The Wow starts now', but soon criticised for poor performance, low-quality drivers for some devices and an irritating user interface. By

the time Service Pack 1 was released in February 2008, Vista was much improved; but its public perception can never fully recover. Further, the Vista user interface does bear signs of haste. When blogger Long Zheng started a website enabling users to vote on their most hated inconsistencies (www.aerotaskforce.com), it soon filled with complaints about issues such as the way Explorer decides to display the contents of a folder as music, or images, even when most of the files are of a different type, and hiding useful information such as file size and date.

Rush job

The truth is that Vista was indeed rushed, mainly because Microsoft spent years going down the wrong track with a version of Windows built more deeply on the .Net Framework and Windows Presentation Foundation (WPF), work that had to be undone and reset. Further time was spent trying to improve Windows XP's security with Service Pack 2, reducing the resources available to build Vista. Vista ended up very late, and one consequence was that third-



Above: The Windows 7 desktop, showing multiple document previews in the new taskbar

party vendors did not have enough time to create high-quality drivers.

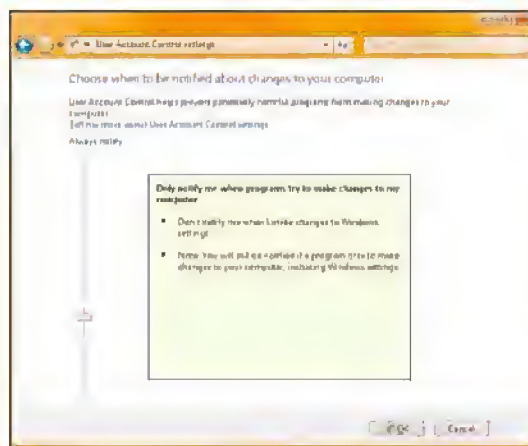
Another Vista problem is the security feature called User Account Control (UAC), which is on by default. This is widely disliked, because it prompts the user with one or more annoying dialogues when they perform certain tasks or install and update applications. The real purpose of User Account Control is to solve a long-standing Windows legacy problem, which is that it does not properly separate system files, application files, and user data, making it insecure and hard to manage.

Although Microsoft long ago laid down guidelines intended to fix this, too many third-party applications ignored them, and even some Microsoft applications do not behave as they should. This is why many Windows users still work while logged on with full administrator rights over their machine, making it an easy target for malware.

UAC in effect reduces those rights while still enabling badly behaved applications to run, though there can still be compatibility problems. The bottom line is that UAC is a key part of Microsoft's Windows strategy, but for the user it is nothing more than annoying; it is a usability burden rather than a benefit. Windows 7 reduces the impact of UAC on the user while preserving most of its value.

The OSX factor

The other factor that has driven Windows 7 development is the increasing market share of Apple's OSX. Many Windows users have switched; few have gone the other way. There are many reasons, including security, marketing, performance, usability, and the advantages of controlling both hardware and software.



Left: Control the chattiness of UAC with this simple slider

The Windows 7 desktop

The Windows 7 desktop includes a new, chunkier Taskbar along with features such as Aero Snap, which makes it easy to arrange windows. Part of the thinking behind larger icons is to support a touch interface, compete with multifinger gestures and inertia effects, though our preview laptop was sadly lacking in touch features. The Windows Sidebar has gone, and the gadgets it used

to contain now live directly on the desktop.

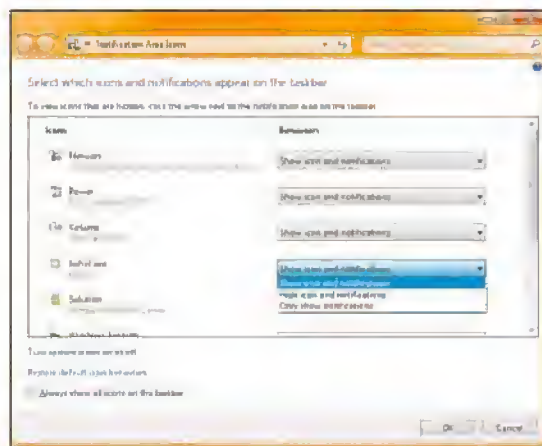
In Vista, the Taskbar shows running applications, while there is a separate Quick Launch area with tiny icons you can use for launching applications without navigating the Start menu. Windows 7 makes the Quick Launch area almost redundant because you can install shortcuts onto the Taskbar itself.

The Jump List is another important feature. This is a pop-up menu that application developers can customise. Since this menu is part of the running application, it can expose key features such as playing or pausing a track in Windows Media Player, while the application remains minimised.

Another welcome feature is multiple preview for stacked instances of the same document or application. Imagine, for example, that you have several Word documents open on a crowded Taskbar. In Vista, you get a single icon showing the number of instances and hovering the mouse previews the top one only. Windows 7 shows a preview of all the open documents, making it easier to navigate.

Opening Explorer reveals the new Libraries feature, which lets you view multiple folders as if they were one. This is great for making sense of multiple music folders created as drives run out of space, or for managing projects.

Windows 7 has better support for devices. One aspect of this is the Device Stage, which



This dialogue determines which applications are allowed to show notifications

These add up to better design and Microsoft is desperate to improve Windows so it can better hold its own. At Microsoft's Remix 08 conference last year, principal researcher Bill Buxton said that the drive for change is now coming from the top. "Last year at the company meeting Steve Ballmer told 85,000 employees: 'If you don't change and you don't go in this direction, we're dead – and I don't want to die'."

The stage is set for the main themes of Windows 7: usability, performance and a determination not to repeat the Vista fiasco.

enables vendors to customise what happens when they connect their device to a PC. Another development is a new Sensor Platform, which provides a common applications programming interface (API) for developers supporting devices such as location providers, motion, light or sound detectors. This will make it possible for applications to respond to your environment, for example.

Making Windows quieter

Windows 7 should be less 'chatty' than earlier versions. One example of this is less intrusive UAC prompts. The core of UAC is the same as in Vista, but its default setting, based on the preview code, is wound down a notch to reduce the number of prompts that appear. Returning to Vista's verbose level is done easily using a slider control. Another example is in the new Notification Area at the bottom-right of the taskbar. In Windows Vista, an application can install itself there and bombard you with 'balloon' messages. Windows 7 suppresses these by default and introduces a new customisation dialogue where you can control the ones you actually want to see. The advantage is that users have more control. The disadvantage is that useful notifications might be missed if the user does not realise they must be switched on.

Using the Action Center

The main new feature in the Windows 7 Control Panel is the Action Center, which brings together the most common maintenance and troubleshooting tasks in a single dialogue. This is where you can check security status, change UAC settings, make

The new Action Center brings together the most commonly used system settings and warnings

backups, or configure Windows Update. Network settings are not accessible here, which illustrates the problem with these user-friendly dialogues: if what you are looking for is not listed, it is more work than simply navigating the entire Control Panel.

Home networking

Microsoft has figured out that not only is it common for there to be more than one PC at home on a wireless network, but also that users frequently bring laptops home from work and want to print documents or connect to home computers. The new solution for home networking is called the Home Group and automates most of the work of sharing folders and media. A key change from earlier versions is that business computers joined to a Windows domain can also join a Home Group. Windows 7 detects which network the machine is on, and changes settings such as the default printer

Home Group simplifies file-sharing at home



automatically. By default, files on a domain PC or laptop are not shared, reducing the risk of inadvertently exposing the confidential data of other home users.

Windows 7 for business

The relationship between Windows for the desktop and Windows for the server is interesting for several reasons. Windows Server 2008 has the same kernel as Windows Vista SP1, though the server product is better liked, which suggests that if Vista has problems, they are not at that level.

The next server release will be Server 2008 R2, which may well have the same kernel as Windows 7 and be shipped at around the same time. It is no surprise then to find that some enterprise features of Windows 7 are only available when it is used with Server 2008 R2. One that is worth mentioning is Direct Access, which enables secure communication between Windows machines, using IPv6-over-IPsec, without the need for a virtual private network. Users

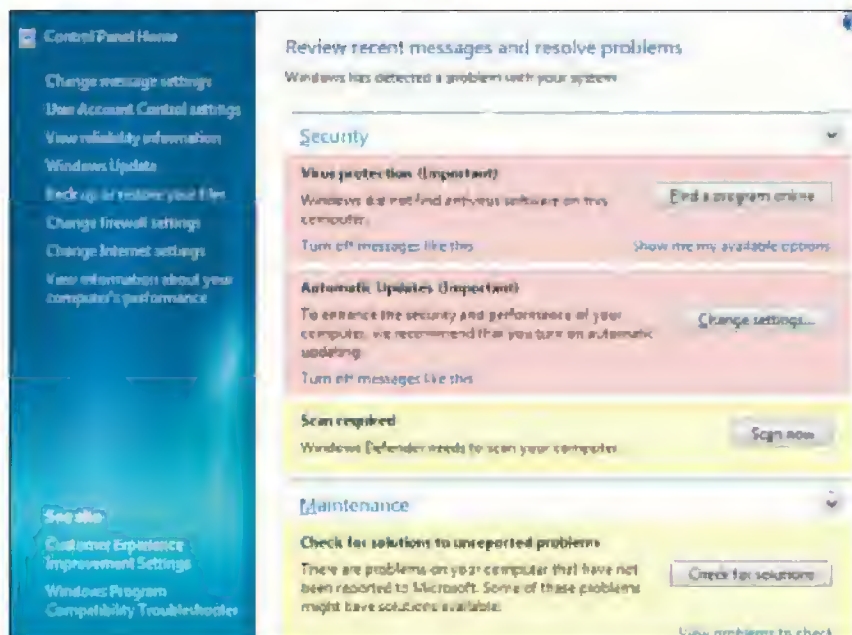
with Windows 7 can access corporate file shares and intranets, or run applications that access internal data, while administrators can manage remote computers, and update software whenever they are connected to the internet. Although it's a compelling feature, the prospect of upgrading client and server will not go down so well.

Do I want Windows 7?

Windows 7 promises to be what Vista should have been – a PC operating system that is smoother, better looking, more

secure and more usable than Windows XP. Microsoft claims to have worked hard on Windows internals, speeding common operations such as copying files. Judging by the preview build performance in general it is better than before. Preserving the core architecture of Vista should mean a high level of compatibility for those upgrading. The hardware requirements appear similar to those for Vista, based on the preview. It is likely that Windows 7 will be a welcome upgrade for Vista users. Those coming from Windows XP will face most of the same compatibility problems as with Vista, but it is now hard to argue that XP is superior. That said, it is still Windows and unlikely to tempt Mac converts back to the fold.

The most radical new feature is multi-touch support, the success of which depends on how usable Microsoft makes it for legacy applications, and the willingness of PC vendors to invest in more expensive laptops and screens in order to take advantage.

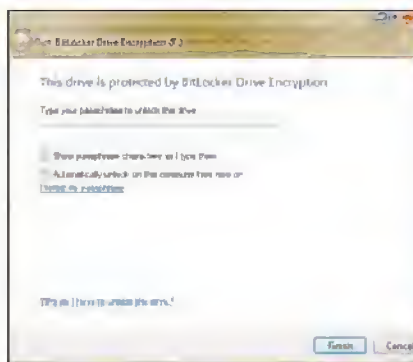


Key new features in Windows 7



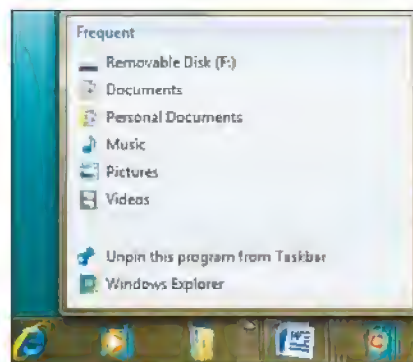
Multi-touch

For PCs such as HP's Touchsmart, Microsoft is touting the new multi-touch user interface as a significant way to control Windows. You can tap and drag with a finger, and use hand gestures to rotate or zoom images, pinching them smaller or expanding them out. The interface simulates inertia, so you can shove objects across the screen. It is a departure from the Tablet PC approach, which usually relies on a special stylus. Touch should work well for applications that are designed for it, but there is a problem with existing applications that require finer control than a finger can easily provide.



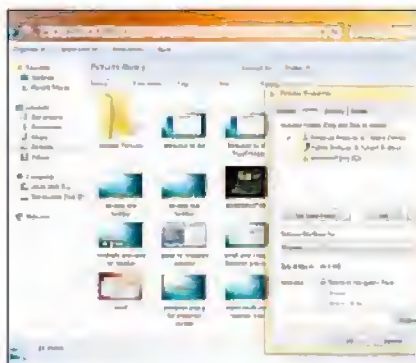
Bitlocker to Go

Capacious USB pen disks are convenient but easily lost, which is risky for confidential data or documents. Bitlocker to Go extends Windows built-in drive encryption to removable storage devices. When you connect a locked disk, Windows prompts the user for a pass phrase or smart card. There is also a recovery key, created when the encryption is first applied, which you should save in case of password loss. If you lose that as well, then the drive is useless until reformatted. On business networks, IT admins can enforce Bitlocker to Go as system policy.



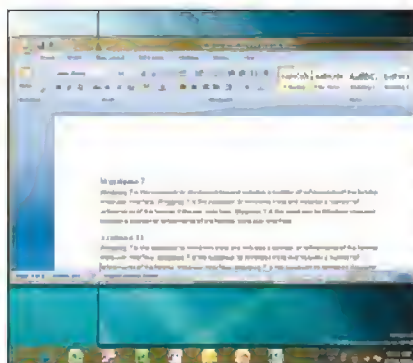
New Taskbar and Jump List

The Windows 7 Taskbar is the single most obvious new feature. It is smarter, better-looking and more flexible than Vista's equivalent. You install shortcuts and launch applications from the main Taskbar area, just as you can with Apple's Dock. Taskbar icons feature a jump list, a pop-up menu that is customised for each application, offering immediate access to key features. For example, in Windows Media Player you can start and stop play without needing to go to the main application window, and the Explorer Jump List shown above gives quick access to common locations.



Organise Explorer with libraries

Libraries are a new feature of Explorer that lets you merge the view of multiple folders into one. In the example above, a folder of Windows 7 screenshots has been merged with the standard Windows picture folders. You can create your own libraries and they do not have to contain files of only one type; you can also use them for projects that combine, say, documents and images. There is also an option to 'Set save folder', which makes the selected folder the default location for items of a particular type. This makes it easy to set a new default if your current disk is nearly full.



Aero Snaps docks desktop windows

Arranging windows on the desktop is easier in Windows 7 thanks to a feature called Aero Snaps. Drag a window towards one side of the screen and it docks to fill half the screen on that side. Drag it to the top of the screen and it maximises. A transparent outline shows where the window will end up. Aero Snaps is handy for tasks such as comparing two documents, or moving content between windows using drag and drop. Another new Aero feature makes all windows transparent if you hover your mouse at the right end of the Taskbar, exposing the desktop temporarily.



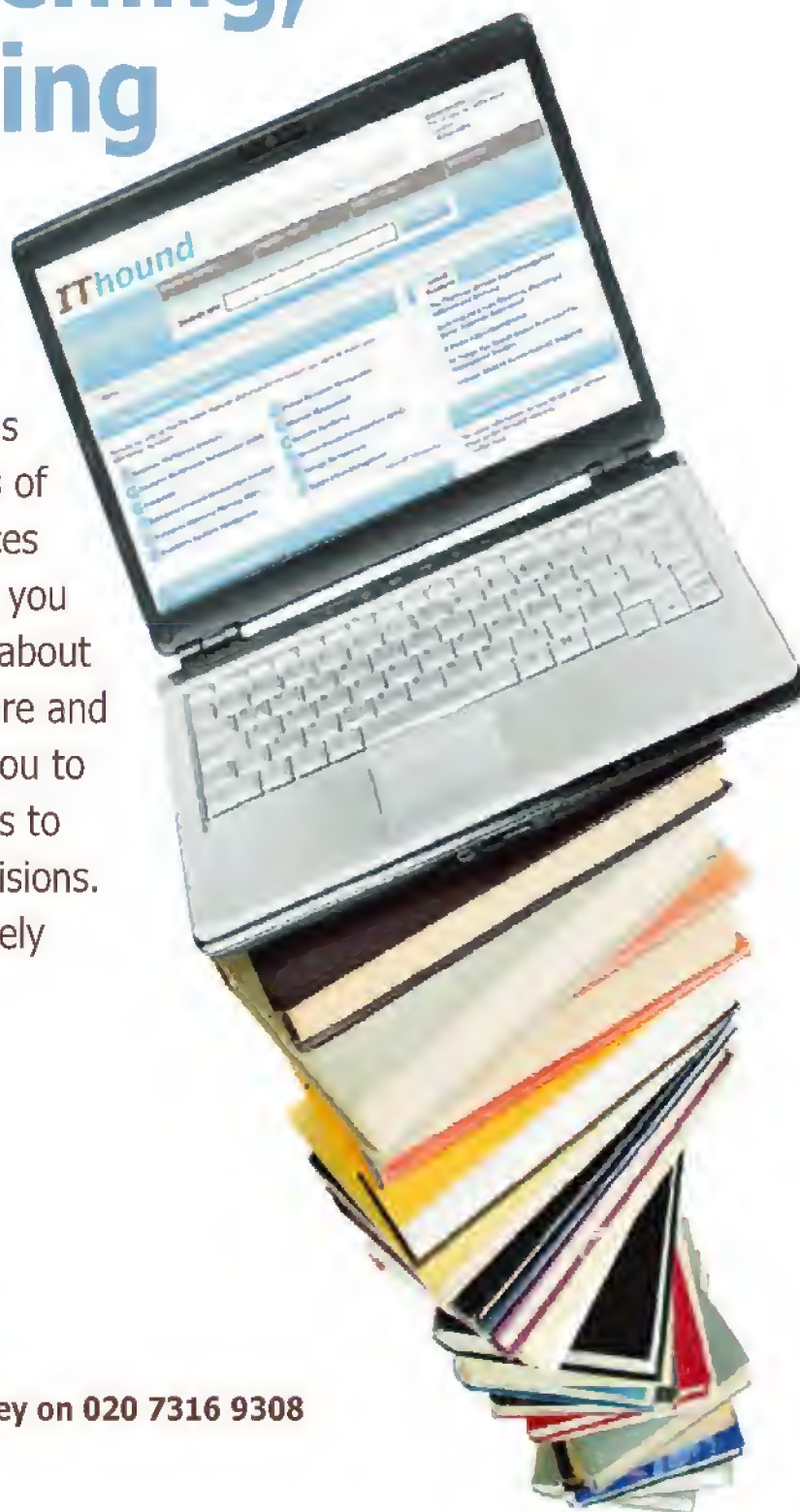
Device Stage for attached devices

The Windows 7 Device Stage is intended to improve the user experience when you attach a device such as a phone, printer or camera. Device Stage allows the vendor to create a custom dialogue that appears on connection, showing the information and actions that are relevant for that particular device. This can include internet links for tasks such as purchasing ink or ringtones. The risk is that vendors may go too far in showing advertising, making the feature more annoying than useful. Another issue is how many manufacturers will bother to create custom dialogues that only work on Windows 7.

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Save Money & Energy

Most of us are now aware of standby power, which is the electricity consumed by many electrical items such as TV's, DVD's, Stereo's, Computers, Printers and Speakers, when they are left plugged in at the electricity wall socket.

What we are probably not aware of is the amount of money wasted due to standby power on an annual basis. Nationally it equates to £572 million pounds according to the Energy Savings Trust. Those little red lights on the front of the TV and the convenience of having things "ready to go" can add up to a lot of wasted energy and money. So when Standby Saver appeared on the popular TV show "Dragons Den" it was hardly surprising to see all five Dragons wanting to invest in the energy saving unit.

What is the Standby Saver and why would you want one? Essentially, it's a multi-plug adapter which you plug all your electrical appliances into, and then when you've finished using the main device such as a TV or a Computer, it will automatically switch off the power to all the other devices plugged into Standby Saver. The TV version works with your existing TV remote control via a supplied infra red sensor, and the Computer version works via a supplied USB connector.

It saves around £43 per year in wasted electricity if four devices are plugged in, and can save even more if all six of the sockets are used. The clever guys behind Standby Saver have even thought about those items which can't be switched off such as Sky Boxes, Virgin Media or a TV



"It saves around £43 per year in wasted electricity if four devices are plugged in, and can save even more if all six of the sockets are used."

recording device that has a timer. Two of the Standby Saver's six sockets allow you to exempt a device from being fully powered off as they include a switchable mode allowing you to select between "Standby Saving Mode" or permanently on.

We think this is a great British invention as it cures a problem all homes and businesses suffer from, and stops wasting energy and money. It adds great convenience too where it's not possible to get to sockets to switch off at the wall, or for anybody with mobility issues where bending over to turn things on or off is painful or difficult. For families with children who forget to turn things off, it's a great solution to a nagging problem, and by installing multiple units throughout the home literally hundreds of pounds can be potentially saved over the course of the year.

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Power struggles

Make effective use of your PC's power-management capabilities

At the risk of stating the blindingly obvious, your computer needs energy to run. But with the unpredictable costs of this energy and increasing concerns over the long-term sustainability of power generation, there are great incentives to try to reduce your computer's power consumption to the absolute minimum.

This feature, part of our ongoing back-to-basics series, aims to give you some practical advice on how to make effective use of the power-management capabilities of your PC, as well as giving you some more in-depth technical background information to help you understand how it all works.

We'll look mainly at Windows XP and Vista in this feature, although we will mention earlier Windows versions and Dos where relevant.

Luckily, setting up a good Windows power-management scheme isn't difficult and doesn't need any advanced hacking skills – you don't even need to edit the Registry. And for the really lazy we'll point you to a free tool that can do it all for you. But for those who prefer the hands-on approach, all it requires is that you understand what you're doing – which is where this feature comes in.

ACPI

The ancestor of modern PC power management was Advanced Power Management or APM (see box on the next page). This was a brave – if ultimately doomed – attempt to help PCs save power, but it eventually led to its successor, the Advanced Configuration and Power Interface (ACPI), which first appeared in Windows 98. ACPI handed responsibility for power management to the operating system (although as we'll explain later some Bios settings can still affect the way Windows works). This concept is known as operating system-directed power management, or OSPM.

In some Bioses you may see various ACPI settings (pictured above), including a



An ACPI Bios may offer many power-management settings, but not all are important in Windows

setting to enable or disable ACPI. This is to support non-ACPI-aware operating systems, for which you can go back to using APM at your peril (see box on the next page). But note that if your Bios has such a setting, you should never change it after Windows has been installed – doing so could cause Windows to refuse to load. If the setting is wrong, the only safe time to change it is before doing a fresh reinstall of Windows.

The reason for this is that Windows installs a different hardware abstraction layer (Hal) for each type of PC hardware. The Hal is the software component that allows Windows to run on a vast range of different PCs: the Hal talks directly to the hardware, and Windows talks only to the hardware via this intermediate layer.

During a fresh installation, Windows tries to determine what kind of Bios your PC has and chooses the Hal accordingly. There's more technical information on this process at the Microsoft Knowledgebase, in article 314088 (<http://support.microsoft.com/kb/314088/en-us>). Once installed, changing the type of Hal requires a fresh install of Windows, which is why you shouldn't change the ACPI status in your Bios.

But assuming your PC is ACPI-compliant and Windows has correctly determined this (which isn't a certainty, if the Bios is badly written or contains bugs), your way is clear to start optimising your PC's power management. Let's start by jumping straight into the thick of it by looking at one of the most confusing terms in power management – sleep.



APM – a bit of prehistory

Back in the early days of Dos, power management took the form of a big red switch. Your PC was either on or off, with no in-between. But with the advent of Windows, battery-powered portables and the huge uptake of computers in business, pressure to reduce energy consumption started to build, culminating in 1993 with the Energy Star programme that required PCs to use less than 30W in standby mode.

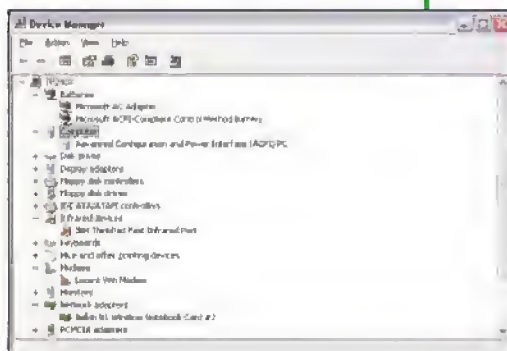
The first industry standard was Advanced Power Management (APM), created by Intel, Microsoft and IBM for the needs of mobile computing. APM was pretty crude by today's standards. Power management of a PC's components and devices was handled by the computer's Bios, and an APM-aware operating system such as Windows could have some basic communications with the Bios about power management. So if your operating system wanted to turn off a component, it would tell the Bios, and the Bios would then do the low-level dirty work. The reverse path could also apply – a timeout in the Bios would send a warning message for the operating system to get its house in order before system shutdown. The only trouble was that both the Bios and OS could end up trying to do opposite things.

PCs without an APM-aware OS relied totally on the APM in the Bios for power management. Most Bioses included some basic power settings you could tweak. But Bios has no awareness of software or data, so a Dos application can't tell the Bios to

'hang on a minute!' while it finishes its tasks, opening the door to conflicts and potential data loss.

APM was pretty dumb. Even under Windows it had no way of telling what you were doing: PCs powering off in the middle of creating a spreadsheet, or embarrassing screensavers kicking in during corporate presentations, were accepted as part of computing life. The only sure way to prevent problems with APM was to disable it.

You can check what type of system Windows thinks you have by clicking Control Panel / Device Manager / System. Click the 'Computer' branch to expand it. Modern PCs with ACPI will display the computer type with 'ACPI' in the name. APM systems will say 'Standard PC'.



Device Manager will show you whether Windows is using APM or not. This is an ACPI-compliant XP laptop from 2001

of power (from the 5V standby output of the power supply) is needed to keep the memory chips and other essential components operating. On our test system, power consumption in this state dropped to just 15W, which is only a couple of watts more than the 'shutdown' state (13W) on our PC (this 'off' consumption figure is high due to the rather old and inefficient 600W power supply in our test PC. See our feature at www.pcw.co.uk/2223197 for advice on buying an efficient model.

Hibernation

Both these sleep states above allow rapid wake-up of your PC – typically just a few seconds. But they still need a small amount of power and for laptops in particular this isn't a good plan for long-term storage. If you leave a laptop in this state for a long time, eventually the batteries will run down and you'll lose any unsaved data.

So a different approach is needed to allow zero power drain while still allowing a quicker startup than cold-booting. The answer is to store the system state data not in Ram but on the hard disk, a process known as hibernation, or the ACPI S4 sleep state.

When hibernation was first implemented, a separate hidden partition on the hard disk was often used. This wasn't really a good plan – if a user deleted the partition, hibernation wouldn't work.

So you'll find most Windows PCs now use a special hidden system file, which is the same size as the amount of memory in your PC. The file is called hiberfil.sys and sits in the root directory of your system drive. Writing the data stored in memory to the hard drive takes some time and it's also a lot slower to read than Ram, so hibernation is noticeably slower than S1 or S3 sleep when shutting down or restarting your PC. The big advantage is that when the system's hibernated, you can safely pull the plug or battery out of your PC and not lose any of the saved system state.

Hibernation first appeared in Windows 95, when it was called suspend-to-disk. It needed special drivers for each PC and so it wasn't widely used. Windows 98 introduced ACPI support, but there were still many problems with hibernation, particularly on Fat32-

Sleepytime blues

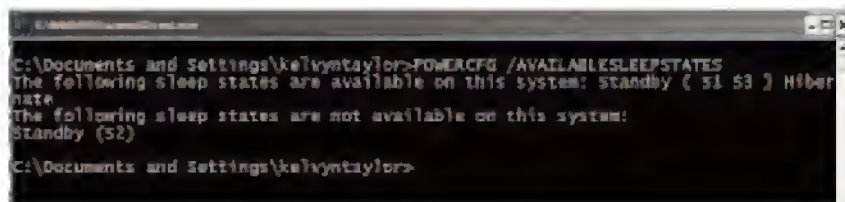
Booting up a PC can take what seems like an eternity, especially when you're in a hurry. This is because your PC's system memory doesn't save information when it's powered off – it's what's known as volatile memory. So, the operating system has to start from scratch every time, loading drivers, data and programs. Electronic components also have to be powered and initialised every time you turn the PC on, which adds to boot time.

Manufacturers realised that it would be much better for users if the PC could run in a reduced power state, ready for instant wake-up such as a TV or other consumer electronic device. This is known as sleep or standby mode, although there's no real standard definition of these terms.

ACPI offers system designers two main ways of making a PC sleep. The least effective way is called Power-on-suspend, or Pos. In the parlance of ACPI it's called the S1 sleeping state (see table, ACPI sleep states, on the next page, for a list of these power states).

The S1 state reduces the power to S1-capable components, such as the processor, but the power supply remains on and fans may still be working. Components that don't support S1 will be turned off. Memory is kept powered up. On our 'typical' test system, entering the S1 state reduced power consumption from its working idle level of 150W to 200W to about 100W. All the fans remained on, but hard drives, graphics cards and other major components were off.

A much more aggressive sleep mode is the S3 sleeping state, or Suspend-to-Ram (STR). In this, system state is saved entirely to memory, meaning that just a small amount



It's easy to find out what sleep states are supported by your PC

ACPI sleep states

TABLE 1

S0	The system is powered and all systems are operational – lowest level of power saving
S1 (Power On Suspend, Pos)	The system is powered, all system context is preserved
S2	The system is powered on, but CPU and cache context are not preserved
S3 (Suspend to Ram, STR)	The system is powered, all system context is lost, but system memory retained
S4 (Suspend to disk, Hibernation)	System is powered off, all context is saved by OS to disk, power can be removed
S5 (Soft-Off)	Same as S4, but no context saved by the OS

formatted drives. It wasn't really until Windows 2000 that it became reliable and didn't need special drivers.

If the hibernation file is deleted for any reason it will be recreated when the system next hibernates. The file is deleted when you disable hibernation in the Windows Control Panel (see below).

The Vista difference

Vista radically changed the flexibility of power management on PCs, although many derided it as too complicated, with multiple ways of turning off the PC listed on the Start menu, including the new all-embracing Sleep mode. Vista's most significant new power-related feature is Hybrid Sleep mode, which is just a combination of the S3 and S4 sleep states. In Hybrid Sleep the system's running state is stored both to memory and to the hard disk. This allows fast wake-up of a few seconds,

but also provides a safety net if the power is turned off while the PC is asleep. If this happens, the data from the hard disk is used to resume the PC, just like hibernation.

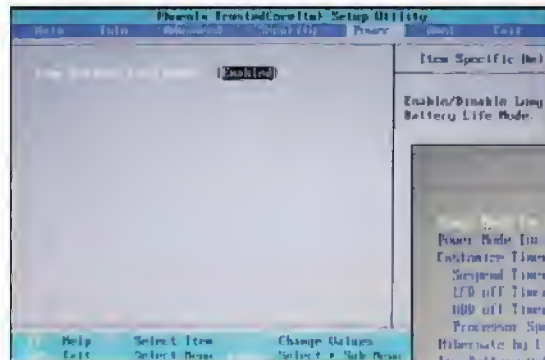
More importantly, Vista is (usually) much more intelligent about how it sleeps, adjusting the type of sleep state, depending

on what the PC is doing. For example, if you're recording a video or downloading a file – if your hardware and software are fully ACPI-compliant – pressing the power button on the Start menu will turn the display off. When the tasks have finished, the system will gradually go into deeper sleep as determined by the timeouts in Control Panel, unless you wake it up from the keyboard or mouse, or another task starts.

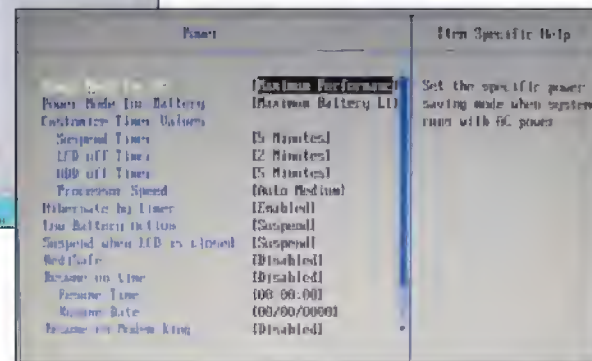
Putting it all together

Now we know how it all works, it's time to make use of our knowledge. First, you should make sure your Bios settings are correct. If you're running Windows XP or Vista and your Bios is not set to enable ACPI, most power-management functions won't be available to you. But as we explained above you'll need to reinstall the operating system.

Below: There are lots of settings relevant only to non-ACPI operating systems in the Bios of this old ACPI-compliant IBM Thinkpad



Above: This Fujitsu Siemens laptop running Vista has minimal power-management settings in the Bios



Magical wake-up

Sometimes you might want to access your PC from a remote location – to get files, or perhaps set it to record a TV show, for example. There is one way to do this, but it's not particularly easy. You'll also need to understand how to configure your router, and your router and broadband connection will need to be on.

Wake-on-Lan (WoL) is a business technology that allows a special data packet ('Magic Packet') to wake up your PC. All you need is a WoL-capable network card (most integrated network adapters on modern motherboards support this, so if your Bios has a Wake-on-Lan entry, it should be fine) and a way of sending a Magic Packet to this card via the web.

It's this last part that's tricky. First, you need a fixed IP address for your broadband router – the easiest way is to get a free Dynamic DNS address from a site such as www.dyndns.org. This will look something like <http://mydyndnsaddress.dyndns.org> and you can use it to send packets to your router from anywhere on the internet.

Then you'll need a program that can send Magic Packets. One free one is WoL – Magic

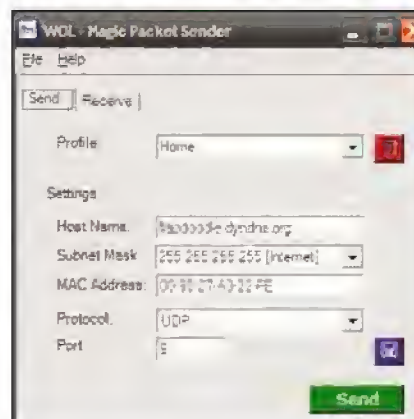
Packet Sender (<http://magicpacket.free.fr>). An internet-based alternative is at www.depicus.com/wake-on-lan/woli.aspx, with a good FAQ (www.depicus.com/wake-on-lan/what-is-wake-on-lan.aspx).

To get this working, it's easiest to first try it on two PCs that aren't

on the same internet connection. You need to know the static IP address or Dynamic DNS of your router and the MAC address of your PC's network card (run the `ipconfig /all` command in a command prompt to find this). You will almost certainly need to enable WoL in your PC's Bios as well – look in the Power section.

Your router may block the Magic Packets, in which case you'll need to manually forward incoming traffic on UDP Port 9 (or whatever port you want to use) to the PC you want to wake up.

It may take some trial and error, but once you get it working it's a very useful facility if you often need to access your home PC remotely.



WoL Magic Packet Sender is a free tool for waking up your PC remotely

Manage your power settings with Edison

There aren't many free utilities for power management, but a new one called Edison recently appeared from Verdiem, a company that supplies power-management solutions to businesses.

The program works on XP and Vista, and is rather a blatant advertising tool (it requires registration and needs an internet connection). But, despite this, it's very useful if you want a simple way to manage your power settings.

You adjust power settings with a single slider control and underneath you can see a rough estimate of the money you'll save. Edison uses local

average electricity prices to work this out, plus average PC power consumption, so it's not very accurate. You can create

custom schemes as well, but this disables the financial calculator.

One of the handiest features is the scheduler that allows you to set your work and home times. So you can, for example, set your PC for minimum savings during work hours and maximum savings at night and weekends.

There's no clever technology to Edison, but it is a simple way to get at the basic settings without having to dig into the Windows Control Panel.



Edison provides a simple front end to Windows power-management settings

Assuming ACPI is enabled, look in your Bios for entries describing 'ACPI suspend state' or similar. These may offer you options such as S1 (Pos), S3 (STR) or combined S1/S3. If possible choose the combined S1/S3 mode. Choosing S1 only will disable Vista's Hybrid Sleep capability, but you will still be able to hibernate the system. S3 capability is required to enable Hybrid Sleep.

If you have no obvious options, there's nothing you can do so don't worry too much – if it's a fairly new machine, the chances are everything will be enabled correctly.

There's an easy way in Windows to find out what ACPI sleep states your system supports. Open up a command prompt (type **cmd** in the Run box on the Start menu) and type **powercfg /availablesleepstates**. This will list all the available states as shown in the screen below.

If it's not what you expected your Bios settings may be to blame.

You may see various timeout settings in your Bios as well, plus many other obscure settings. Most of these aren't important, as Windows will ignore them. It's only if you're using a non-ACPI operating system such as Dos that they may work.

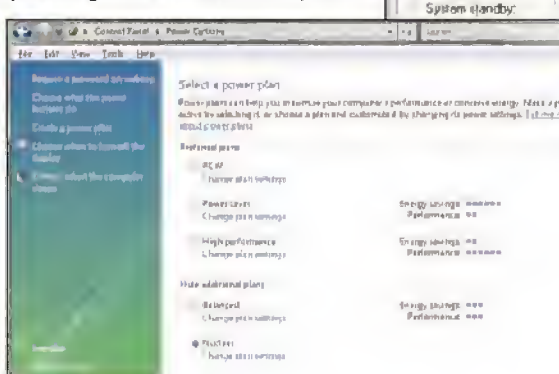
Windows XP power settings

Open up XP's Control Panel and double-click the Power Options icon. You'll see a screen such as the one far right.

XP's power settings are fairly basic. There are a number of preset Power schemes you can customise, but you're limited to choosing

the timeouts for display power, hard disk power, standby and hibernation. If none of the presets is to your liking, adjust the timeouts in the relevant dropdown boxes and click the 'Save as' button. Give your scheme a name and you're done.

The problem with XP's power management is that it's not that smart. If you're doing a presentation, for example, the display timeout may still kick in – which is why there's a 'Presentation' preset. There are no keyboard shortcuts to the power schemes either, unless your PC ships with proprietary power-management utilities that offer this facility. Switching between modes is tiresome, but if you wish you can use the **powercfg.exe** utility mentioned above to change the power mode using a batch file or Desktop shortcut. Type **powercfg /L** to list all current power



Above: XP's power-management settings are fairly basic, but still customisable

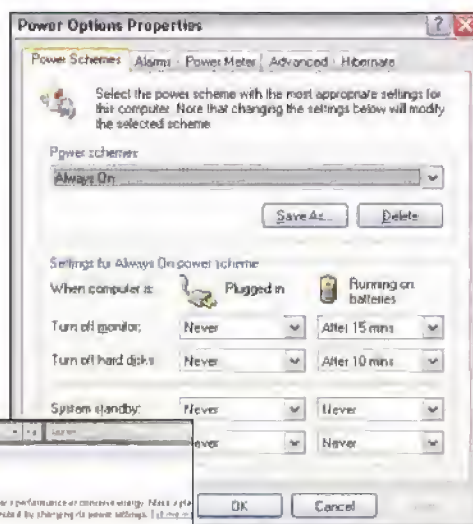
schemes, **powercfg /Q <scheme>** to see the parameters of a particular scheme and **powercfg /S <scheme>** to set the active scheme. Note that you'll need to enclose the name of the scheme in double quotes if there's a space in the name, such as "Always On". **Powercfg /?** will give you many more ideas for using this handy built-in utility.

Windows XP can be picky about going to sleep on some machines, and the sleep and standby functions don't always work well, especially if you have lots of peripherals and add-in boards that might not support all the correct sleep states. But with a bit of testing, you can usually get it at least into an S1 standby mode, which will save you a fair bit of power. Part of XP's problem is that it's too tolerant of badly written programs and drivers that prevent sleep, whereas Vista is a lot more forceful in shutting down badly behaved programs.

Vista power settings

Vista can be quite schizophrenic when it comes to power-management settings. On the one hand, it tries to hide most of the gory details with a simplified user interface. But on the other hand, if you delve into the advanced settings there are an awful lot of confusing options. On the plus side, we've found it is a lot more predictable – but not perfect – than XP when it comes to sleeping.

To be fair, the preset power schemes that Vista offers (type 'Power Options' in the search box on the Start menu) are clearer and less numerous than XP's, offering choices



Left: The new user interface in Vista is intended to simplify choosing power-management schemes

based on the level of power savings rather than on your usage model. But the default 'Balanced' plan is rather too conservative for serious energy savings – it's this that gave rise to the stories of excessive power consumption and poor battery life in Vista, rather than any innate inefficiency in the OS.

You can easily create your own custom plans by clicking on the 'Create a power plan' link on the left action panel. Any existing plan can also be modified by clicking the 'Change plan settings' link below its name. This brings up a window where you can change the display and sleep timeouts. But click on 'Change advanced settings' and you'll see a dialogue box such as the one pictured, with a long list of extra settings.

You shouldn't need to adjust any of these unless you're troubleshooting (see box, right), but most of them are self-explanatory. There are a couple of exceptions though. USB Selective Suspend, PCI Express Link State Power Management and Adaptive Display are three that might bamboozle you. USB Selective Suspend is mainly relevant to laptops – it allows the OS to turn off individual USB devices that are idle. It's enabled by default, and you shouldn't need to change it – disabling it might prevent Windows entering sleep mode. This feature is also present in Windows XP, but it is not selectable in the power settings menu. You access it via the USB hub's entry in Device Manager – click Properties then Power Management.

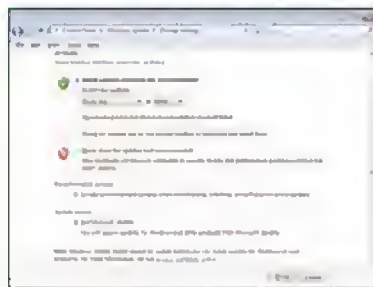
PCI Express Link State Power Management enables Vista to reduce the power to individual devices on the PCI Express bus. As PCI Express is a serial bus, links to devices are constantly powered to maintain data connections, unlike parallel buses such as PCI, where when no data is passing, no power is consumed. Again, this is mainly of interest for newer laptop users (PCI Express is used for graphics cards and Express Card expansion slots), although it could help if you're trying to get maximum power savings on a desktop with PCI Express components.

Adaptive Display is a new feature in Vista. When enabled, Windows works out how often you wake up the PC by moving your mouse or hitting a keyboard key. The more often you do this, the longer it waits before turning the display off.

Home and away

Vista uses ACPI a lot more intelligently than XP. You shouldn't need to worry any more about Vista switching itself off in the middle of an important download or TV recording. And if you're sharing audio or video files with other computers on the network via Windows Media Player, it might not go into a deep sleep at all – unless you change the setting to force it to (see box, above right).

Tips to help you get out of trouble



Microsoft Update can download additional software updates and some hardware drivers

Ever since the days of the 'It is now safe to turn off your computer' Windows power-down screen, power management has driven users to distraction. But much of the blame for PCs that won't shut down properly is badly written programs and drivers.

Graphics, audio and TV tuner drivers are notorious for preventing PCs sleeping or giving screen corruption when your PC resumes from sleep. That's why we'd recommend using only WHQL-certified drivers. It's easier to do this if you use Microsoft Update as well as Windows Update – go to <http://update.microsoft.com>.

Disk errors are also another gotcha – make sure your disk is regularly defragmented and run Chkdsk now and

again (right-click the drive icon and choose Properties / Tools / Check Now).

As mentioned, XP is the worst offender for not being aggressive enough with rogue programs and drivers. Vista is more robust – if a program or driver doesn't respond to a shutdown request, it will be forced to close.

Vista Service Pack 1 fixed a problem with slow resume from hibernation on some systems, if you don't want to install SP1, you can download the relevant fixes from <http://support.microsoft.com/kb/938979>.

USB devices can also cause problems, if they are slow to resume from sleep mode – try unplugging them before you shut down and see if the problem goes away.

In Vista, if you haven't enabled Away Mode, you may find your PC won't sleep if you're sharing media files over a network. Away Mode is enabled via the advanced settings menu for each power plan.

Check that your network card isn't preventing your PC sleeping – find it in Device Manager, click Properties / Power Management. Clear 'Allow this device to bring the computer out of standby'.

If you use sleep or hibernate mode a lot, you should remember to do a proper shutdown and restart occasionally to prevent gradual program memory leaks from making your system unstable.

Microsoft calls this 'Away Mode', where the PC's screen and audio are muted, but the PC is otherwise fully on (S0 state). No special hardware support is needed to enable Away Mode – it's all handled by Vista.

Pressing the power button on the Start menu or your PC should, by default, put your PC into the deepest sleep state possible that won't affect any ongoing tasks or running programs. Vista will check every time your 'sleep' timeout is reached, and when all tasks have finally finished it will go into hybrid sleep if your PC supports this.

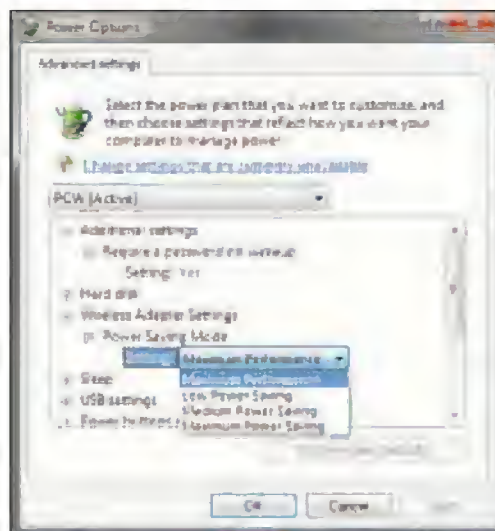
Timing is everything

There's no real magic involved in configuring your PC's power settings, but it can take a bit of trial and error to find the right settings.

For laptops, you have a few more choices, as you need to decide what you want to happen when you close the lid, for example. If you're a frequent traveller, we'd

suggest you use hibernate mode when closing the lid and S3 or hybrid sleep for the sleep button. Vista's hybrid sleep will give you faster wake-up times, but will slowly drain the battery while you're out.

There are too many possible scenarios for us to run through, but hopefully you'll now be equipped with the knowledge to get Windows working the way you want it to. **PCW**



Vista offers a lot of hidden advanced power settings, but only a few are worth worrying about

computing

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BLUE IS THE COLOUR

2008 was the year in which the winner of the high-definition disc wars was finally decided, with Blu-ray emerging victorious over rival HD DVD. And, with a clear winner, more companies have jumped into the fray with drives. In last month's round-up of ultimate PCs, several came with Blu-ray drives. This month, one of our group tests looks at standalone drives, suitable for turning your PC into a high-definition playback system, or simply for backing up lots of data. Find out more on page 101.

High definition isn't just for discs, of course; more and more camcorders – and even some compact cameras – now allow you to capture high-definition video. In the second of this month's group tests, we look at software that can help even the novice turn video footage into something presentable.

And hot on the heels of the Core i7 PCs, we also take a first look at AMD's new Phenom II processor.



CONTENTS

HARDWARE

- 58 Rock Xtreme XSL8-9550
- 59 Acer Aspire 6935G-844G32Bn
- 60 Sony Vaio VGC-JS1E/S
- 61 Lenovo Thinkpad SL400
- Asus N80Vc

PERIPHERALS

- 62 Lenovo Thinkpad USB Portable Secure Hard Drive
- AMD Phenom II
- 65 Nokia N85
- Truecall call screener
- 66 Humax Foxsat-HDR
- Ricoh R10
- 67 Sling Media Sling Catcher
- Western Digital WDTV
- 68 Iiyama Pro Lite E2208HDS

SOFTWARE

- 68 Tune Up Utilities 2009
- 69 Norton Antivirus 2009
- 70 Serif Digital Photo Suite 2009
- 71 Magix Musicmaker 15
- Camtasia Studio 6

GAMES

- 72 Grand Theft Auto IV
- 73 Far Cry 3

PC ESSENTIALS

- 76 Our pick of the latest components and accessories
- 79 How we test

BEST BUYS

- 80 Best Buys

GROUP TESTS

- 89 Video-editing software
- 100 Blu-ray drives



Prices include Vat unless otherwise stated

OUR SCORING

Excellent ★★★★★ Very good ★★★★☆ Good ★★★☆☆ Below average ★★☆☆☆ Poor ★☆☆☆☆

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.

Best Buy: The best product in its class in terms of performance, features and value for money



REVIEWS



'Just about any up-to-date PC will be able to work well with a Blu-ray drive'

Read the group test on p101

GAMING NOTEBOOK

Rock Xtreme XSL8-9550

Flapship model lives up to claim of 'world's fastest laptop'

The Xtreme family is Rock's high-end gaming notebook range, the flagship of which is the XLS8-9550, a blisteringly fast SLI-configured desktop replacement notebook.

It's a big beast, measuring 394x299x60mm (wxdxh) and weighing a hefty 6kg including the large power brick; you'll only think it is portable if you're used to lugging around a desktop PC and monitor to LAN parties. In fact, the Clevo chassis is so big, not only does it have two graphics cards in it, it also has three hard drives. The gloss black finish is set off by a brushed metal panel set into the lid with a large X inset, and the panel also provides extra protection for the screen.

At the heart of the XSL8-9550, as you might have guessed from the numbering, is one of Intel's 45nm Q9550 desktop Core 2 Quad processors. Clocking at 2.83GHz, the Q9550 has a front-side bus (FSB) speed of 1,333MHz with all four cores sharing 12MB of L2 cache. Supporting the CPU is an Intel P965/ICH8R chipset combination while the pre-installed Windows Vista Home Premium operating system is kept happy by 4GB of PC2-6400 800MHz DDR2 memory. If you need more, the motherboard supports a maximum of 8GB.

All this power certainly gives the XSL8 plenty of oomph and it lives up to Rock's claim of being the 'world's fastest laptop'. It certainly is the fastest we have ever tested, with a PCmark score of 8,680 and managing a reasonable score of 5,209 in the more demanding PCmark Vantage.

Its graphics performance is, as you might expect, equally impressive. As mentioned above, it uses two Nvidia graphics cards configured in an SLI setup; one GeForce Go 9800M GTX with 1GB of GDDR3 memory would be interesting enough, but two produces some startling scores: 14,099 in 3Dmark06 at a 1,024x768 resolution, but only dropping to 12,140 at the screen's native 1,920x1,200 resolution.

When it comes to real gaming, using World in Conflict's built-in benchmark at 1,920x1,200 it produces an average frame rate score of 17fps – hardly playable, but that was with all the game options set to their highest settings. Reducing either or both settings and resolution should give some much higher frame rates, as proved by the 43fps average result from running the benchmark at 1,024x768 but still with the high detail settings.

The 17in WUXGA TFT screen is excellent, with a 1,920x1,200 pixel native resolution and X-Glass coating, making it ideal for playing games or



Rock's XLS8-9550 weighs in at a hefty 6kg, but has two graphics cards and three hard drives

watching movies using the built-in Blu-ray drive. There is a webcam built into the top edge of the screen's bezel, too.

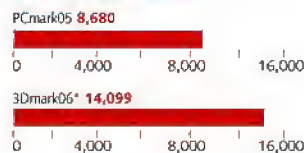
The three hard drives can be ordered built into 750GB, 960GB or 1.5TB Raid arrays, though in our review sample they were kept as three separate drives, in this case Samsung 250GB, 7,200rpm units.

As you might expect for a desktop replacement notebook, there are plenty of ports and communication options, with most of the ports housed in the left-hand side of the chassis alongside and above the optical drive. LAN (for the Gigabit Ethernet), VGA out, four-pin Firewire, and modem ports are joined by an Express card slot and a 7-in-1 card reader. Two double stacks of USB2 ports are built into the right-hand side of the chassis, while the rear panel holds a DVI port and an S-video port. As well as the wired Ethernet you get 802.11a/b/g/n Wifi and Bluetooth 2.0EDR.

A notebook such as this is destined to spend its life plugged into a wall socket but we tested the battery anyway and it confirmed what we thought: just over an hour using it in normal everyday use and just under an hour for watching a DVD.

Simon Crisp

Performance



*Tested at 1,024x768 in 32-bit colour

Verdict

Pros Superb performance

Cons Heavy; poor battery life

Overall A very powerful desktop replacement notebook with a good array of features, but with a price tag to match

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £2,934.80

Contact Rock Direct

www.rockdirect.com 0845 688 0501

System requirements Intel Core 2 Quad Q9550 (2.83GHz) • 4GB PC2-6400 DDR2 Ram • 2 1GB Nvidia GeForce 9800MGTX graphics • 3 250GB hard drives • 17in WUXGA display (1,920x1,200) • 802.11a/b/g/n Wifi • Bluetooth 2.0 • 2-megapixel camera • 4 USB ports • 394x299x60mm (wxdxh) • Three-year C&R parts and labour warranty

WIDESCREEN NOTEBOOK

Acer Aspire 6935G-844G32Bn

A laptop feast for movie buffs



Although it's not full HD, it's good enough for watching DVDs or Blu-ray movies using the built-in Blu-ray drive

Launched in early 2008, Acer's Gemstone Blue range of notebooks has recently been refreshed to include Intel's Centrino 2 technology. The first example of the updated line-up we have seen is the Aspire 6935G-844G32Bn, a stylish 16in desktop replacement notebook that is crammed with features – and at an attractive price, just under £1,000.

The Gemstone Blue design results in a stylish notebook. The lid has a dark blue, high-gloss finish that is set off by a gloss black bezel and keyboard surround, with a matt black chassis bottom and grille above the keyboard. The wristpad with its textured coating has been changed from the light grey finish of earlier models to a darker finish, making the whole thing look much classier when you open the lid.

Powered by an Intel Core 2 Duo P8400 (2.26GHz) processor, backed by 4GB of 800MHz DDR2 memory, the 6935G has plenty of power to deal with everyday tasks and scores a creditable 5,862 in PCmark05 and 3,822 in the PCmark Vantage benchmark.

Powering the graphics is a 512MB Nvidia 9600M GT, which does give a fair bit of games playing potential (6,321 in 3Dmark06), albeit at lower resolutions and detail setting, but the 6935G is aimed more at being a multimedia notebook than a gaming one and in this respect the 16in 1,366x768 pixel resolution screen, with its 16:9 aspect ratio, is just the thing for watching movies on. It may not be full HD, but it's still good enough to watch DVD or Blu-ray movies using the built-in Blu-ray drive, or to watch TV on through the analogue/digital TV tuner card.

Aiding the movie or TV watching experience is the audio subsystem. Two speakers are hidden under the grille above the keyboard, while the subwoofer is

cleverly built into the screen hinge and the system supports Dolby Home Theatre.

The keyboard has good responsive keys, but the controls for the Acer Cine Dash force it off centre – and for the most part the jury is still out on the Cine Dash. While it does a good job of controlling your media content with responsive, touch-sensitive controls, we would prefer the space to be taken up by moving the keyboard to the left and using the space on the right-hand side for a full numeric keypad.

The touchpad features vertical scrolling and is pleasantly responsive to use, something that is aided by using the same textured coating as the rest of the wristpad. Sitting under it are two fairly small mouse buttons separated by a small fingerprint reader.

Storage is provided by a 320GB 7,200rpm hard drive, which sounds a lot but once you start downloading TV programmes you will soon find that filling up fast, so it's a good job the Blu-ray drive is also a DVD burner. Built into the underside of the front panel is a 7-in-1 Flash card reader for easy access to your photos.

In terms of connectivity, all the usual suspects are there to help connect the 6935G to the outside world; 802.11a/b/g/Draft-N wireless networking via an Intel Wifi Link 5100 card, Gigabit Ethernet, Bluetooth 2.0+ EDR – and a good old-fashioned modem.

Battery life is disappointing, but it's debatable whether something that weighs 3.8kg (including power brick) will be carried around all day. When we tested with the latest version of Mobilemark 2007, the six-cell 4,400mAh battery gave a life of one hour, 51 minutes for the DVD Playback test, two hours, 34 minutes for the Productivity test and three hours, two minutes for the Reader test.

Simon Crisp

Performance

PCmark05 **5,862**



3Dmark06* **6,321**



*Tested at 1,024 x 768 in 32-bit colour

Verdict

Pros Features; build quality

Cons Disappointing battery life

Overall Acer's Aspire 6935G is a good all-round desktop replacement notebook with an excellent feature set and strong performance, matched by a lower than expected price tag

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £949.97

Contact Laptops Direct

www.laptopsdirect.co.uk

0870 167 0818

Specifications Intel Core 2 Duo P8400 (2.26GHz) • 4GB 800MHz DDR2 Ram • Nvidia GeForce 9600GT graphics with dedicated 512MB video Ram • 320GB 7,200rpm hard drive • Blu-ray/DVD combo drive • Digital/analogue TV tuner • 7-in-1 card reader • HDMI out port •

ALL-IN-ONE PC

Sony Vaio VGC-JS1E/S

A stylish PC in a range of colours



The Vaio VGC-JS1E/S produces sharp colours and excellent contrast, which is great for watching movies

There's one style of computer that doesn't seem to have captured the public's attention as much as it should have, and that's the all-in-one design. On the face of it the concept of a PC built into the back of a monitor sounds like a good, space-saving idea, but people seem to have spurned it for either a conventional desktop PC or a notebook. One of the few companies to have kept the faith with the concept is Sony, and one of its latest all-in-one models is the Vaio VGC-JS1E/S, built around a 20.1in TFT screen.

The design of the VGC-JS1E/S nods in the direction of Apple's iMac, the stylish design using a single handle-like foot under the screen and a small metal arm at the rear to provide stability and viewing angle. Our review sample was finished in brushed metal silver, but the JS1E is also available in black and pink.

At the heart of the VGC-JS1E/S sits one of Intel's Core 2 Duo E7200 processors, which has a clock speed of 2.53GHz and a 1,066MHz front-side bus. Backing this up is 3GB of PC2-6400 800MHz DDR2 memory, together with Intel's G45 Express chipset, so although it doesn't have stunning performance it will do all the everyday jobs reasonably well, as confirmed by our benchmark scores of 5,092 and 3,230 for PCmark05 and PCmark Vantage respectively. And it does it all pretty much silently.

However, the one thing it won't do is play the current crop of hardcore games, as it relies on Intel's integrated GMA X4500HD graphics technology, something proved quite well by the average frame rate score of 11 frames per second (fps) when using World in Conflict's built-in benchmark.

The 20.1in X-black WSXGA+ screen is up to Sony's usual high standard and has a native resolution of 1,680x1,020 pixels. It produces sharp colours and excellent contrasts, just right for watching movies on, but you'll be watching them from standard DVDs, as only a Pioneer DVD burner is installed in the VGC-JS1E. The screen's glossy coating does reflect office lighting a little, but is by no means the worst offender we have seen for this. Built into the top of the bezel is a 1.3-megapixel webcam with dual mics.

The right-hand side of the unit houses just the optical drive, while the left-hand side is home to a Memory Stick slot and a separate SD card reader, two USB ports, three audio ports and an on/off switch for the 802.11b/g/Draft-n Wifi. The rest of the ports are on the back of the unit and comprise three more USB ports, a Sony mini Firewire port, an optical S/PDIF port and the port for the Gigabit wired Ethernet.

The built-in speakers sit under the screen and for monitor speakers they're some of the best we have heard, again perfect for watching movies and certainly loud enough, though they do tend to lose what bass response they have and distort a little if you turn them right the way up.

For storage Sony provides a 500GB hard drive but, as is usual with a Sony system, this comes with a fair portion of software preloaded to help you with any of the multimedia jobs you are planning to do. For the audio side of things there's Sony's Vaio Music Box and Sonic Stage Mastering Studio 2.5; for photo editing you get Picture Motion Browser and Vaio movie story, which also helps you work on your video files, along with Win DVD 8, and to burn them onto disc there is Easy Media Creator 10.

Simon Crisp

Performance

PCmark05 5,092



3Dmark06* 1,101



*Tested at 1,024x768 in 32-bit colour

Verdict

Pros Stylish, compact design

Cons Shame it doesn't have better gaming potential

Overall Stylish all-in-one design, with reasonable all-round performance

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £685.08

Contact PC World

www.pcworld.co.uk

Specifications Intel Core 2 Duo E7200 2.53GHz • 3GB PC2-6400 DDR2 Ram • Integrated Intel GMA4500 graphics • 500GB 7,200rpm hard drive • 20.1in WSXGA+ display (1,680x1,050) • 802.11a/b/g/Draft N Wifi • Bluetooth 2.0 • 1.3-megapixel camera • Five USB ports • 487x157x408 (wxdxh) • One-year warranty

NOTEBOOK PC

Lenovo Thinkpad SL400

A well-built laptop for business



The old adage of 'if it ain't broke don't fix it' certainly applies to Lenovo's Thinkpad styling. There have been some subtle changes to the design over the years, but you can recognise the familiar black slab across a crowded room. While the matt black lid might have been replaced by a trendy glossy fingerprint-attracting one, the Thinkpads are still the well-built, secure notebooks beloved by IT managers everywhere.

One of the latest to come our way is the SL400, a 14.1in notebook powered by an Intel Core 2 Duo T5670 processor speeding along at just 1.8GHz, backed by 2GB of PC2-5300 667MHz memory. However, data security is more important in Thinkpads than fast clock speeds. In any case, the SL400 can cope with everyday tasks perfectly well. The same can be said of the graphics performance, as it's powered by Intel's integrated GMA4500MHD solution. The 14.1in WXGA screen has a native resolution of 1,280x800 and is available with an anti-glare coated screen.

The Thinkpad's keyboards have gained almost legendary status and the SL400's is no exception. Well built with no noticeable flexing from the keybed, the keys themselves have a good response. The trackpad is the same – responsive without being overly sensitive, and it has both vertical and horizontal scrolling. For those who hate trackpads there is a trackpoint and sets of mouse buttons for both.

For connecting to the outside world the SL400 comes with Intel's Wiliink 5100 Wifi card, which supports 802.11a/g/n. You also get Gigabit Ethernet and a 56K modem alongside built-in mobile broadband, which comes with a free 30-day trial courtesy of Vodafone.

Simon Crisp

Verdict

Pros Usual Thinkpad build quality and security features

Cons Disappointing performance and surprisingly small hard disk

Overall The new SL400 is a worthy addition to the family with a good blend of features, security, system tools and a reasonable price tag

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £574.99

Contact Lenovo www.lenovo.co.uk

Specifications Intel Core 2 Duo T5670 (1.8GHz) • 2GB PC2-5300 667MHz DDR2 Ram • Intel GMA4500 integrated graphics • 160GB hard drive • 14.1in WXGA (1,280x800) screen • 802.11a/g/n Wifi • 3G mobile broadband • Four USB ports • 336x227x34mm (wxdxh) • 3.1kg (with AC adapter)

NOTEBOOK PC

Asus N80Vc

A stylish laptop for home or business



Hard on the heels of the most stylish netbook on the planet, the S101, Asus brings us the N80Vc, a very stylish 14.1in notebook aimed at the business user, although it would look equally at home used in the living room.

Describing the N80Vc's colour is a bit of a challenge: in some lighting the lid is black, at other times it's more of a dark chocolate brown, while in others it has

a distinctive purple hue. But whatever the colour, it has a high-gloss finish with an inlaid pattern of silver dots and dashes, which is continued on the wrist pad.

At the heart of our review sample N80Vc was an Intel Core 2 Duo T5800 processor, which has a core clock of 2GHz, backed up by 3GB of 800MHz DDR2 memory, close to the 4GB maximum supported by the motherboard. The performance is pretty much average for this type of notebook, scoring just 2,995 in PCmark Vantage, but in the real world it has enough power to handle the installed Windows Vista Home Premium OS and any everyday applications you might run on it.

Powering the graphics is an Nvidia GeForce 9300M GS card with its own dedicated 512MB of Video Ram, so it won't trouble any hardcore gamers. As proved by the average frame rate score in World in Conflict of just 3fps (frames per second), no amount of tinkering with the resolution or in-game detailing will give you anywhere near playable frame rates.

The keyboard is comfortable to use, even though the keybed itself shows a degree of flex, and the trackpad has just the right degree of sensitivity. The two mouse buttons have a reassuring click when pressed and there is a fingerprint reader sitting between them for extra security.

Simon Crisp

Verdict

Pros Compact design

Cons Battery life isn't great

Overall The Asus design team keeps on coming up trumps. The N80Vc is a well-designed, well-featured notebook, equally adept at home or on the road

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £614.31

Contact CCL www.cclonline.com 01274 471 201

Specifications Intel Core 2 Duo T5800 2GHz • 3GB 800MHz DDR2 Ram • 14.1 in WXGA LED backlight Colorshine screen (1,280x800) • 320GB 5,400rpm hard drive • Nvidia GeForce 9300M GS with dedicated 512MB Ram graphics • DVD super multi combo • 8-in-1 card reader • 802.11a/b/g/n • Windows Vista Home Premium

PORTABLE USB ENCRYPTED HARD DRIVE

Lenovo Thinkpad USB Portable Secure Hard Drive

Protect your data from prying eyes



Encryption systems such as Vista's BitLocker, or third-party products such as Deslock, offer a high level of protection but generally require a correspondingly high level of configuration – usually by trained IT staff.

The Thinkpad USB Portable Secure Hard Drive requires no special drivers or software to work. It's a self-contained unit comprising a small external USB enclosure containing a 5,400rpm hard drive, protected

by 128-bit AES encryption. The top of the enclosure houses a numeric keypad and a single status LED.

Plug in the hard drive to a free USB socket and nothing happens, save for the status LED lighting up red to indicate the drive is in Standby mode. This is how the drive will appear to anyone without the correct credentials. In this mode, the PC won't even recognise that a drive has been attached, so there's no way of attempting to access the stored data from the PC.

Keying in a valid password – in reality a Pin of between six and 24 digits – switches the drive into User Mode. The status LED turns green and you can then use the drive as normal.

Up to 10 passwords can be set. To do this, you must use a special key combo to enter Admin Mode. If you manage to forget all your passwords, you will have no choice but to erase the drive and start again. You can do this by using a special key sequence – unfortunately, so can anyone who may wish to destroy your data. Using the drive also requires a little thought as it will lock itself if the PC is put to sleep, effectively causing an unsafe removal when the PC wakes up.

The Thinkpad USB Portable adds a lot of security with only a little inconvenience. Recommended for anyone working with sensitive data. *Paul Monckton*

Verdict

Pros Hardware encryption; excellent build quality; USB powered; no drivers

Cons Can be erased with a few keystrokes; no read-only mode; price

Overall This is a simple and secure way of keeping your data protected but costs more than a standard drive

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £99.99 (160GB) or £129.99 (320GB)

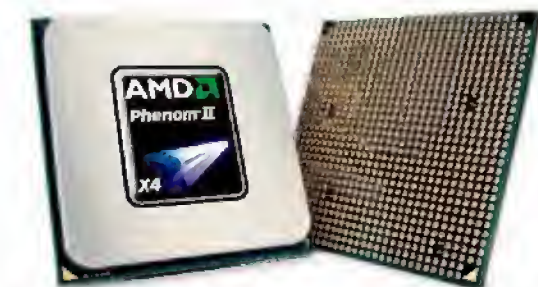
Contact Lenovo www.lenovo.co.uk

Specifications USB-powered external hard drive • Built-in USB cable • 5,400rpm drive • Numeric keypad, 128-bit AES encryption in hardware • Up to 10 user passwords plus Admin password • Bootable • Non-skid anti-vibration pads • 193g • (wxdxh) 88x122x22mm • Three-year warranty

CPU

AMD Phenom II

The latest processor from AMD, in a PC near you soon



AMD's original 65nm Phenom CPU and Spider platform launches were a bit of a damp squib, neither really performing as well as they should. Much better things are expected from the desktop version of the new 45nm Shanghai server processor.

The new desktop part – codenamed Deneb – has a die size of 258mm containing approximately 758 million transistors, comprising four cores and will be better known as the Phenom II X4. It offers far better overclocking potential than the original Phenom. At launch in early 2009 there

will be two speeds of processor, with many more set to come later in the year, forming part of AMD's new Dragon enthusiast's platform for 2009, which replaces the older Spider.

The faster of the two new processors is the Phenom II X4 940 Black Edition, which has a clock speed of 3GHz, while the slower Phenom II X4 920 runs at 2.8GHz. Both will fit in existing AM2+ motherboards with a Bios upgrade.

The new processors come with 512KB of L2 cache per core, for a total of 2MB, and there is a 6MB L3 cache shared between the four cores. The integrated 128-bit memory controller can be configured to read/write simultaneously for dual 64-bit channels and can run at speeds of up to 1.8GHz, supporting DDR2 memory up to PC2 8,500 (DDR2 1,066MHz).

Both the new processors have a voltage range of between 0.875 and 1.5V, and a quoted TDP (Thermal Design Power) of 125W. For a platform to earn the Dragon label it must contain an AMD Phenom II processor, an AMD 790 series chipset and ATI HD4800 series graphics. *Simon Crisp*

Verdict

Pros Performance; fits in existing motherboards

Cons Price

Overall At last a Phenom that does what it says on the tin

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price Phenom II X4 940 £257.31, Phenom II X4 920, £220.89

Contact AMD www.amd.co.uk

Specifications 2MB L2 cache • quad core • 128Mbits/sec memory controlled • 3GHz or 2.8GHz clock speed • TDP 125W • 45nm process • Socket AM2+

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SMARTPHONE

Nokia N85

Good looks and an OLED screen in a small package



The N85 is the sleeker younger brother of the N96; it's similar in size to an N95 without the slider and its own slider feels positive and well built. The case is largely black, with menu, application, cancel and media keys lighting up when they're active and fading away the rest of the time, giving a very polished look. Push the slider down and the buttons will either light up in media player mode or N-Gage mode for gaming. The phone's a little heftier than the N95 and feels more solid, despite being smaller.

It has an OLED screen, rather than LCD, which helps with battery life and gives great, vivid colours – though as it's OLED, you'll find the screensaver glows. It's also great for movie playback.

At first the keypad looked similar to the N96, which felt flat, but in use it's actually much closer to the N95, with good tactile feedback, so you can text quickly and accurately. The navigation pad can also double as a scroll wheel, though it takes a little getting used to.

The software – S60 Third Edition Feature Pack 2 – is much the same as on the N96, with support for WebDav, and you can connect to services such as Apple's iDisk and browse them in the file manager. There's internet radio support (as long as it's MP3), as well as the standard FM, and you can even share your music in the car, thanks to a built-in FM transmitter.

We do have a few gripes – the usual Series 60 browser isn't up to par. USB charging is a welcome addition, but the micro USB port means another cable, and there's no socket for an ordinary Nokia charger. The camera is OK, but needs pretty good lighting for best results. And there's no edit button – if you want to copy and paste, you need to call up the menu.

But those are mostly minor issues; this is a nice phone – it's compact, has good battery life, good build, and a great screen. The N96 may have DVB-H, which is probably pointless in the UK, but it's the N85 that's really the flagship in our book – and arguably what the N95 should have been.

Nigel Whitfield



Verdict

Pros Extremely good screen; decent battery life; USB charging

Cons Poor IMAP functionality

Overall The best N series handset yet

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £405 SIM free; free on contract

Contact Nokia www.nokia.co.uk

Specifications 50x16x103mm (wxdxh) • 128g • 2.6in QVGA OLED screen • Quad-band GSM & 3G • 802.11b/g Wifi • Bluetooth • FM transmitter • FM radio • USB2 • Micro USB connector • Micro SD slot (8GB card included) • 74MB memory • Five-megapixel camera with geotagging • Video capture up to VGA 30fps • WMV, WMA, AAC, MP3 • Flash video, Real Video playback • Assisted GPS • Symbian S60 Third Edition Feature Pack 2

SMART ANSWERING MACHINE

Truecall call screener

Telephone add-on blocks calls you don't want and optionally records those that you answer



The need to screen unwanted phone calls was once largely restricted to celebrities and victims of malicious or demented callers. Now junk calls are becoming almost as overwhelming as spam email and are equally tricky to block. The Truecall system is designed to do so with the minimum of hassle.

The basic setup could hardly be simpler. You plug a lead from the little Truecall box into your main phone jack and your phone or Dect base station into the box. After a few seconds your phone rings and you are

prompted to record a greeting message for callers. Pressing the star button during a call to or from a number will place it on a Star list of callers you will accept and pressing the hash key puts it on a Zap list of those you won't. Starred numbers are passed straight through and zapped numbers are either left unanswered (you can't hear the ringing) or played a message of your choice.

Unrecognised callers, or those without Caller ID (which include all from overseas), are asked to identify themselves so you can choose whether to answer. They can be cut off if they don't reply, eliminating automated calls, including junk faxes.

Options too numerous to list here are designed to deal with just about any conceivable type of telephone nuisance. Configuration can be done on the keypad, or rather more easily via an indirect web interface on Truecall's remote server, which carries an annual charge of £15 after the first year. This also allows you to simply paste in a list of Star or Zap numbers. Holding down a button on the Truecall box sets up a dial-up link that synchronises data with the server.

You can pick up your messages remotely by calling your own number and calls can be recorded with the aid of an optional module.

Clive Akass

Verdict

Pros Easy preliminary setup. Neat and effective

Cons PC users might prefer local control rather than via a server at a small but not insignificant cost

Overall Fine-tuning messages and configuration will take time but is worth the effort. Works well as a smart answering machine and (optionally) call recorder

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £97.50 (70-hour recorder module £24; 140-hour £40; Optional server annual charge £15 after first year)

Contact www.truecall.co.uk

Specifications Recording software requires Windows XP or Vista • USB SD card reader supplied • Web access facilitates configuration but not absolutely necessary

DIGITAL TV RECORDER

Humax Foxsat-HDR

The first hard drive recorder for Freesat



The Humax Foxsat-HDR is the first device for Freesat+, the branding being used for hard disk recorders on the BBC/ITV-backed Freesat satellite service (www.pcw.co.uk/2224159). It's a slim standard-width device with a front panel featuring just a bright display that shows channel and recording names. There's also a standby button and a power switch on the rear, along with the connectors. Inside is a 320GB hard disk and one of the latest system-on-a-chip PVR designs.

For full functionality you'll need two satellite feeds; the Humax detects whether you have them or not during initial installation, then asks you for your postcode – so you get the right BBC and ITV regions – and scans for channels, of which there are around 140 so far, including radio and regional variations.

Picture quality is, on the whole, excellent via HDMI, though little can redeem the low bit rates on some SD satellite channels. And with two feeds, you

can record two channels simultaneously; with just one, the box dims out those channels you can't select. Picture quality from BBC HD is stunning, but the claim of space to record 80 hours of HD

content is a bit optimistic – we reckon it would be around half that.

There are quirks, though; press the Record button when in the Electronic Programme Guide (EPG) and you just get a single recording of that programme. To get a series recorded you press OK instead, then answer successive questions about recording the series and the HD version if available. We'd like this to be simpler and to be able to delete programmes more easily and faster. You can't customise the EPG either.

But there are plenty of good touches; you can archive programmes (though not presently BBC HD) to a USB hard drive and the Ethernet port will allow iPlayer access in future. There are configurable 'skip' options that mean you can avoid adverts easily too. In day-to-day use we had few problems and no missed recordings – but as with Freeview+ you will be at the mercy of the broadcasters sending the right signals for series and programme over-runs. *Nigel Whitfield*

Verdict

Pros Great pictures on HD; easy to use; PC archiving

Cons Some interface quirks; remote design; not ideal for multi-satellite users

Overall If you want to record Freesat, this is a great choice, with plenty of potential too

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £293

Contact Humax, www.humaxdigital.com/uk

Specifications Twin satellite tuners • HD and SD reception • USB2 host • 320GB hard drive • HDMI • 2 Scart • Optical audio output • Ethernet • SD upscaling to 1080i

COMPACT DIGITAL CAMERA

Ricoh R10

The latest Ricoh camera offers subtle improvements over the popular R8



At its launch, the R8 brought with it many new features, not least of which was a complete physical redesign. However, upgrading from an R8 to an R10 is much like playing one of those spot the difference games in your local free paper.

They share an almost identical body, both use 10-megapixel sensors and both are fitted with 28mm wide-angle lenses with 7.1x optical zoom, while significant features such as dual mode image stabilisation and face detection were already available on the R8.

Once you've convinced your eyes to accept the idea that the two cameras really aren't the same, the subtle differences start to pop out at you – as long as

you're looking at the back of the camera, that is. Perhaps the most noticeable feature is a larger, 3in LCD which shares the high-quality 460,000 dot resolution of its predecessor.

There's also an extra button, labelled 'Fn'. While this button doesn't add any new functions per se, it does provide a very quick way to change certain key settings while shooting. For example, you can use it to move the autofocus target without moving the camera.

To find other improvements you'll have to search within the camera menus. With a feature borrowed from Ricoh's high-end GR Digital II and GX200 cameras, the R10 is now equipped with an accelerometer which is able to provide a digital 'spirit-level' display showing you when you're holding the camera level. It also provides an automatic rotation function when viewing your images.

Solidly built, the R10 feels like a real camera, not a toy or a fashion accessory and takes pictures of a correspondingly high quality. Ideal for enthusiasts who like a little creative control, it's also very easy to use despite its large range of features.

Perhaps the best improvement of all is that the R10 costs £50 less than the R8 at launch. *Paul Monckton*

Verdict

Pros Build quality; Picture quality; creative control; big zoom

Cons Very small improvements over the R8; no manual mode

Overall A subtle upgrade from the R8

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £199.99

Contact Ricoh www.ricoh.co.uk

Specifications 10-megapixel, 1/2.3in sensor • 7.1x optical zoom (28-200mm 35mm equivalent) • 1cm macro • CCD-shift vibration reduction; 1/2,000 seconds – 8-second shutter speed • ISO 64-1,600 • 3in TFT monitor with 460,000 pixels • 12 scene modes • Auto level sensor • SD/SDHC compatible • 54MB internal memory • Movie mode • Face recognition • Anti-shake system • USB2 Hi-speed interface • Audio/Video out • 300-shot battery life • 102x26x58mm (wxdxh) • 168g

MEDIA STREAMER

Sling Media Sling Catcher

Watch video from a Slingbox, USB device or PC



Sling Media is best known for its Slingbox devices that send television over the internet. This new product, however, plays video rather than sending it.

The Sling Catcher needs to be connected to your network using an Ethernet cable, as there's no built-in wireless. It connects to your television via composite, S-video, component video or HDMI, and supports both standard Pal and high-definition (up to 1080i) TVs.

The Catcher has three modes. The first is to watch and control a remote Slingbox. We tried this with a Slingbox Solo, itself connected to a cable set-top box. The results varied massively. With a fast network connection delivering video at 4Mbps/sec, the Catcher provided an excellent picture that looked every bit as good as the original, and

using the remote to control the cable box worked fine. On occasions where the video stream stuttered down to below 200Kbits/sec, however, the results were unwatchable. You'll need a good home network to get the best from this mode, but we found that Sling Media's own powerline kit did the job.

The Catcher can also watch video sent from a PC's screen using the Sling Projector software. We were sceptical, but the results were impressive: the projector is easy to use and makes it easy to select an area of the screen to send. We projected a two-hour TV programme playing in Windows Media Player, and it only stuttered twice. You'll need a fairly powerful PC to use the projector, though. The Catcher can also show video files on a connected USB device. This works well, with a wide range of formats supported.

All in all, the Catcher is a good – if expensive – product for a niche market. If you have a Slingbox or want to watch online videos on a television, it does the job well. On the other hand, we wish it supported UPnP streaming, as well as Sling's proprietary systems.

Tom Royal

Verdict

Pros All three modes work well if your PC and network are up to scratch

Cons Fast network needed for good results; no wireless built-in; no UPnP streaming; quite expensive

Overall Does its job well, but expensive and limited if you don't have a Slingbox

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £200

Contact Sling Media

<http://uk.slingmedia.com>

Specifications Ethernet • 2 USB • Composite • S-video • Component video • HDMI • Stereo phono and S/PDIF connections • Projector software requires 1.6GHz Core 2 Duo or 3GHz Pentium 4/Pentium M processor • 1GB Ram

MEDIA JUKEBOX

Western Digital WDTV

Can this barebones jukebox compete with feature-rich rivals?



The WDTV from Western Digital is a digital media accessory that, unlike most rivals in this field, doesn't offer network access or built-in storage. Instead, you must connect external storage to one of the two USB2 ports to view media. With an HDMI and digital optical port alongside standard composite at the back, it's well prepared for modern HDTVs and supports playback of resolutions up to 1080p. Media files stored on attached devices are separated automatically into video, music and photo menus, with each offering a nice degree of control over how files are sorted and browsed, including a search function to filter large collections.

The WDTV offers some impressive file support that includes standards such as H.264, Mov and MKV and Ogg and Flac for audio, alongside more traditional formats, and is one of the most impressive we've seen in terms of handling the wide range of file types prevalent in today's market. Performance is also good, with little or no buffer time when a file is opened or during playback. Responsive pause, resume and browse controls make it a true joy to use. The interface is excellent and in addition to being well designed and easy to navigate, it offers a nice degree of control, both through the settings menus and during playback to zoom, pan, adjust subtitles and audio support, with repeat and shuffle functions for audio and slideshow control for photos.

The only real issue we have with the WDTV is the lack of support for digital rights management-encoded content, but then again few rivals include this.

Overall, this is an excellent device that's well designed and reasonably priced enough to make a genuine argument for using your own external devices for storing and playing back media and should be considered a serious competitor to more feature-packed streamers in this market.

Paul Lester



Verdict

Pros Great interface; impressive performance; good media control

Cons No internal storage or network support

Overall The WDTV performs well, is a joy to use and is cheap enough to make it a worthwhile solution

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £78.99

Contact Western Digital

www.wdc.com

Specifications Audio support: MP3, WMA, Ogg, Wav/PCM/LPCM, AAC, Flac, Dolby Digital, AIF/Aiff, MKA • Video support: MPEG-1/2/4, WMV9, AVI (MPEG-4, Xvid, AVC), H.264, MKV, Mov (MPEG-4, H.264) • Photo support: JPEG, GIF, TIF, BMP, PNG • Connectivity: HDMI, Digital optical, Composite, USB2 • 303g • 40x100x125mm (hxdxw)

22IN TFT MONITOR

Iiyama Pro Lite E2208HDS

Full 1080p HD resolution on a compact 16:9 22in panel



Most widescreen PC monitors on sale today come in a 16:10 aspect ratio – 22in models usually providing a screen resolution of 1,680x1,050. While this is perfectly adequate for the majority of desktop applications, it's not quite enough if you want to view a full-HD movie in all its 1080p glory.

The E2208HDS is different. Having an aspect ratio of 16:9 it's the same shape as a widescreen TV – a little wider than the usual PC monitor. It also supports

a screen resolution of 1,920x1,080, which means it's capable of displaying a 1080p movie without losing any quality through scaling. Previously, this resolution would have required a considerably more expensive 24in monitor.

For a low-cost panel, this is a very neat and tidy display, with an attractive thin bezel and easy-to-use control buttons. The on-screen display is very basic: there are no preset display modes or fancy options, but everything is very easy to set up and adjust. A simple tilting stand is provided, which incorporates a small clip to help keep your cables tidy.

Dual inputs, both VGA and DVI (with HDCP) are provided, but there's sadly no HDMI connection, which would have been perfect for this display and it could have been connected directly to a Blu-ray player or games console.

In our tests, the E2208HDS produces a very clear, sharp picture with very good contrast. The colours aren't the most accurate we've seen, but with calibration you can achieve a very pleasing image.

If you search online you can find this display for a very reasonable £150 which, for a full HD display, is excellent value for money.

Paul Monckton

Verdict

Pros 1080p resolution; price

Cons No HDMI; basic features

Overall Full 1080p resolution from a 22in monitor makes this budget model excellent value for money

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £171.35

Contact Iiyama www.iiyama.com

Specifications 22in TN panel with 16:9 aspect ratio and 1,920x1,080 resolution • 1,000:1 contrast ratio • 10,000:1 dynamic contrast ratio • 300cd/m² brightness • 16.7 million colours • 0.248x0.248mm pixel pitch • 5ms response time • Dual VGA and DVI connectors • HDCP support • 2 1W stereo speakers • Kensington lock • Vesa 100 mount • 516.5x193x286mm (wxdxh) • 4.2kg

SYSTEM UTILITY

Tune Up Utilities 2009

A collection of tools to clean and optimise your PC



Thanks to the relatively high performance on offer from even basic PCs in the modern market, tuning and optimising a machine isn't nearly as essential as it used to be. But for those who do like to keep a clean house, Tune Up Utilities has been one of the most effective all-in-one solutions in the past and has recently been updated for 2009. In truth there's very little on offer here in terms of new features, with most changes focusing on a tweaked interface and tools that are already a fundamental part of the package.

For a quick clean-up solution the software installs a one-click maintenance application that can be used periodically to fix the Registry, free up disk space, remove invalid shortcuts and defragment the hard disk. The bulk of control is found through the main interface however, with the wide range of tools available split into performance, clean-up, problem-solving and Windows tune-up. While quite a few of these are supplied with Windows if you know where to look, there are some distinctly useful components here such as the Registry cleaner/defragmenter, undelete functions to recover lost files and a shredder to permanently delete data.

Many of the other tools, such as the uninstall and startup manager, process manager and system defragmenter are simply revised versions of the tools supplied with Windows, though each of them does offer a greater degree of control. For those with older machines the speed optimiser and performance adviser, which can tell you which software can be disabled if it is rarely used, will be beneficial and even though there's nothing particularly radical here, we liked the fact that the components are well integrated, easily accessible and could make a real difference to how your operating system runs.

Paul Lester

Verdict

Pros Easy-to-use range of well-integrated tools; one-click maintenance; great for beginners

Cons Alternatives to many of the tools are supplied with Windows

Overall Tune Up Utilities doesn't really offer enough for advanced users, but there are plenty of genuinely useful features here for beginners

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £29.99

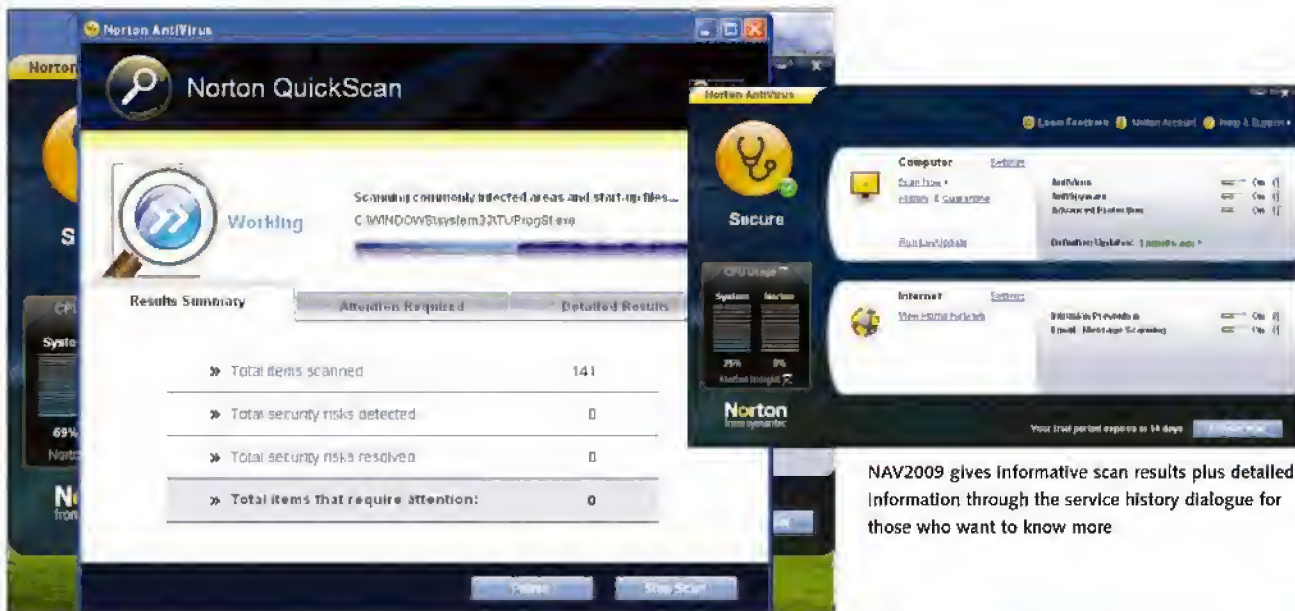
Contact Tune Up www.tuneup-software.co.uk

System requirements Windows Vista (all versions) • Windows XP SP2, 300MHz CPU • 800x600 display • 256MB memory • 80MB free hard drive space

SYSTEM SECURITY

Norton Antivirus 2009

The latest version of Symantec's award-winning virus and spyware scanner



NAV2009 gives informative scan results plus detailed information through the service history dialogue for those who want to know more

If you're happy using the Windows firewall or have another dedicated solution you're sticking to, anti-virus and anti-malware software is a must to shore up system security. Symantec has been at the forefront of this technology for some time and Norton Antivirus 2009 (NAV2009) adds a range of new features to address criticisms of both its own software and rivals in the same market.

First up is Norton Insight, an intelligence-driven technology that aims to save time by targeting high-risk files, which not only speeds up scans but means they aren't required as often. Automatic updates have been improved with the new rapid pulse system to ensure that your definitions are never more than 15 minutes old. The software has also been generally tweaked to give a better defence against web-based attacks and improve the efficiency and effectiveness of deep-clean scans.

All these updates (and there are more, which we'll highlight below) are welcome additions to an already impressive package whose interface now shows real-time CPU usage to underline the improved efficiency of the software. The main interface displays a reassuring green tick if all is well and allows you to switch each of the components on or off, run a scan or view recent activity and quarantined files. Custom scans can be created using a wizard-based approach and can now be configured to run when the computer is idle, and a silent mode prevents the software interrupting movies or games.

The comprehensive range of security on offer includes advanced heuristic protection, rootkit and stealthed item scanning and sonar protection which detects threats based on application behaviour without

the need for a specific definition from an update. Along with email, instant messaging, browser and intrusion protection it's a very reassuring collection of tools to guard against the latest threats. For those running a network in the home, the software will also monitor your wireless connection and provide remote monitoring for other computers on the network.

Scan results offer plenty of information on exactly what's been detected and why, and the security history dialogue offers further details for those who want to know more. Along with impressive usability and a nicely streamlined interface, Symantec offers both phone and online support if you get stuck or encounter a technical issue.

In terms of performance we did notice an improvement in both scan times and the load the software puts on your CPU when it's running. Though there were still some occasions when applications started to chug during a scan, the progress should make the software more appealing to those with older machines. The anti-virus tools are predictably top-of-the-line and have been certified by independent bodies VB100, W.C.L 1 and 2, and ICSA. The rapid pulse feature also seemed to work well – rarely straying over 10 minutes and never past the quoted 15 minutes during our tests.

Overall, it's difficult to criticise any particular area of the software. While there are a few minor holes, such as the lack of parental control, it covers all the main requirements. However, it's the price that may put off those who prioritise value for money. While it is one of the best solutions of this type, NAV2009 costs around the same as some of the cheaper all-in-one suites out there.

Paul Lester

Verdict

Pros Comprehensive degree of protection; effective scanning tools; easy to use

Cons Still a little resource-hungry; expensive

Overall Despite the price NAV2009 should be considered one of the most effective anti-virus/anti-spyware tools on the market

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★☆☆

Overall ★★★★★

Price £39.99 (three PCs, one year)

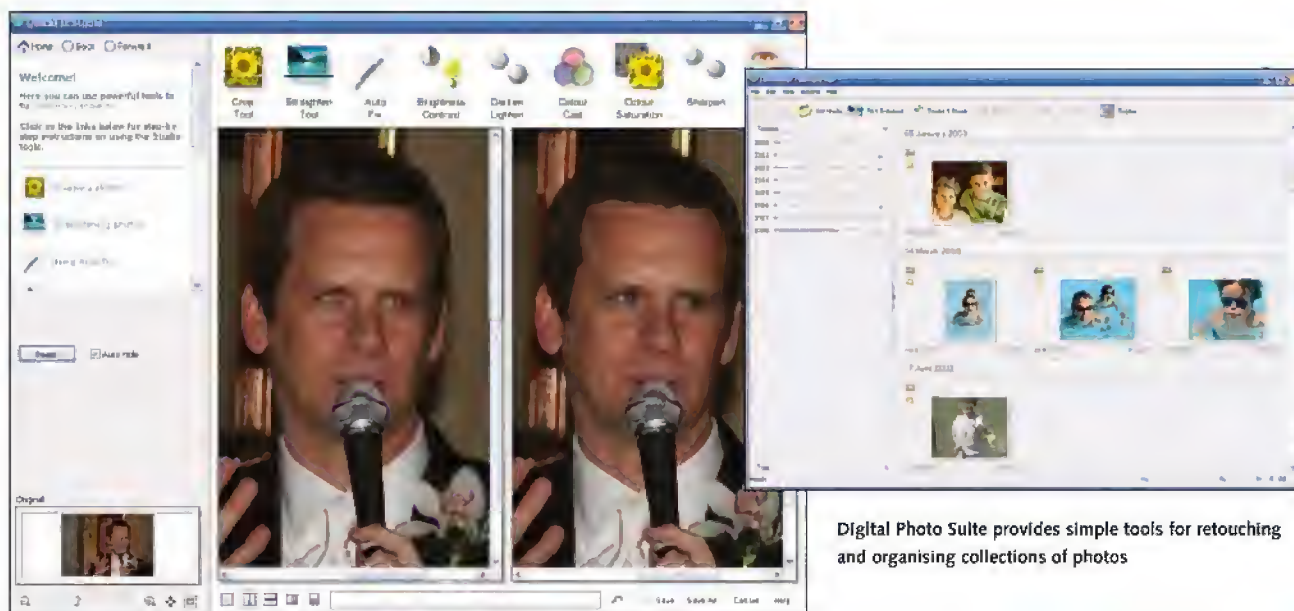
Contact Symantec
www.symantec.com

System requirements Vista Home Basic/Home Premium/Business/Ultimate • XP with Service Pack 2 Home/XP Pro/XP Media Center Edition • 300MHz or faster processor • 256MB of Ram • 150MB of available hard disk space

PHOTO-EDITING SOFTWARE

Serif Digital Photo Suite 2009

A basic, but affordable, photo-retouching program



Digital Photo Suite provides simple tools for retouching and organising collections of photos

Serif's new Digital Photo Suite 2009 doesn't have the powerful editing tools of more expensive rivals such as Photoshop Elements, but it provides a good basic set of photo-editing tools at a very affordable price.

The suite consists of two programs, Album Plus and Panorama Plus, although it's the first of these two that provides the main organising and editing features. When you launch Album Plus for the first time, it asks if you want to import a set of photos from a specific folder, or simply let the program search your entire hard disk. Like most photo organisers, Album Plus allows you to browse and search for pictures using settings such as date, rating, or keywords, and you can switch from thumbnail previews of large groups to zoomed-in views of individual images simply by double-clicking on any picture. There's nothing particularly innovative here, but the program's photo-management features are straightforward and simple to use.

In addition, Album Plus includes three 'studios' that can be activated simply by clicking on the Fix And Enhance button at the top of the screen. The Quick Fix Studio allows you to perform simple editing tasks such as adjusting brightness and contrast, colour saturation, cropping an image, or removing red-eye. Each tool is represented by a large icon in the toolbar that runs across the top of the screen, and when you click on any tool a second panel on the left-hand edge of the screen displays tips that explain how it works. There's also a useful split-screen option that displays 'before' and 'after' versions of your photo so that you can see how your changes will work. And, as well as the standard 'Undo' command, there's a 'revert' option.

The Makeover Studio works in a similar fashion, but provides tools designed specifically for working with portrait photographs. There are options for whitening teeth, removing dark circles from under eyes, smoothing out wrinkles, and even a 'fake tan' option.

Instant Artist Studio allows you to create effects such as a pencil sketch, oil paints and watercolours and impressionist or expressionist paintings. These filters produce mixed results though – sometimes they can be quite effective, while you can just as easily end up with a big blotchy mess of colour.

The three studios are all easy to use, so even complete beginners will be able to tidy up their photos quickly. Our only real complaint is that the program can be a little sluggish when working with very large, high-resolution images (we tested it on a 1.8GHz Pentium 4 laptop).

When you've finished editing, the final option is the Create And Share button. This allows you to upload photos to Facebook or Flickr, or save them as a Flash video file that can be uploaded to sites such as Youtube. You can print a variety of documents such as calendars and greetings cards, or the Panorama Plus program can be used to 'stitch' together a series of overlapping landscape photos.

Admittedly, Digital Photo Suite doesn't provide the precise editing tools or the wide range of special effects filters that you can find in programs such as Photoshop Elements or Corel's Paint Shop Pro. This means you're essentially limited to fixing flaws in your photos, rather than being able to creatively modify or combine photos to create new images. However, it is a good tool for newcomers who don't want to spend a lot of money on more advanced editing program. *Cliff Joseph*

Verdict

Pros Affordable; easy to use

Cons Limited creative tools; can be slow when handling high-res photos

Overall It's no Photoshop, but provides an affordable option for fixing simple flaws in photos

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £29.99

Contact www.serif.com

System requirements 500MHz processor, with Windows XP or Vista
• 512Mb Ram • 650MB hard disk • Internet access for file-sharing options

AUDIO SOFTWARE

Magix Musicmaker 15

Create your own songs with this easy-to-use music program



The success of Apple's Garageband on the Mac has proved there's a demand for easy-to-use music software that will allow budding young musicians to create their own songs on their home computer. Musicmaker from Magix attempts to provide a similar set of music tools for the PC, and this latest version includes features aimed at beginners.

The program's welcome screen allows you to start a new project from scratch, but you can also ask it to play a tutorial video or load one of several demo songs, to give you an idea how the program works.

When you enter the main program interface, you see a series of tracks running across the top half of the screen. This is where you arrange the pre-programmed 'loops' and other sounds that will make up your song arrangement. The lower half of the screen is occupied by the Media Pool, which contains the program's built-in collection of loops and sounds.

The program now allows you to switch into 'Easy' mode by pressing a button at the top of the screen. This hides some of the more advanced tools that might confuse new users and displays a large 'Infobox' in the bottom-right corner of the screen. When you place the mouse over any tool or button, the Infobox provides a quick explanation of how that tool works.

To make things really easy, there's a 'Songmaker' option that can automatically create a song for you. When you click the Songmaker button in the toolbar it asks you to select a musical style, as well as a selection of instruments to include in the song – you can even ask it to add one of its prerecorded vocal tracks too.

The manual has a tendency to throw around jargon such as 'Midi' without explaining it clearly, so there's some room for improvement. However, features such as the Songmaker and Infobox provide a nice, simple introduction to the music-making process. *Cliff Joseph*

Verdict

Pros New features provide extra help for novice musicians

Cons The manual's a bit jargon-heavy

Overall It's a little pricey for beginners, but Musicmaker will grow with you as you gain experience.

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £44.99 (download) or £52.98 (boxed)

Contact Magix www.magix.com/uk

System requirements

Windows 2000, XP or Vista •

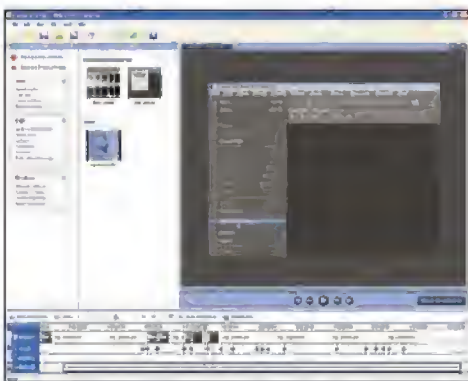
1GHz processor • DVD-Rom drive

• 3GB hard disk space

SCREEN VIDEO CAPTURE

Camtasia Studio 6

Record and edit desktop movies



Camtasia Studio 6 is the latest version of Techsmith's desktop screen capture application. Aimed at those who need to produce polished, professional presentations such as application training materials, there are two elements to the package: a screen capture recording application and an editor.

There's not much to say about the first, other than it's supremely easy to use and can be configured for different screen sizes and capture areas. The editor is comparable with a fully fledged video-editing

application, with features for editing on-screen action.

Possibly the most useful of these is a tracking feature that automatically zooms in on the cursor to provide close-up shots of important actions such as menu selections and button clicks.

This new release adds a number of new video output formats including H.264, which replaces .flv in the Blog and Web output presets. Youtube and HD display options are also included, alongside an option to generate and upload videos to Techsmith's Screencast.com video sharing site.

The program has good audio features; you can record audio commentary during live capture or later, and insert duplicate video frames to keep the action in sync if your words run over time. This version permits decoupling of the audio and video timelines to provide further editing flexibility and a new 3D tilt effect rotates and skews the screen.

The productivity enhancements, along with the new MPEG-4 based output options, make this a strong upgrade candidate. In the absence of competitors, other than the more expensive Adobe Captivate, or a slew of lesser shareware programs, it should also attract plenty of new users. It's a shame that the price puts it out of reach for all but professional users. *Ken McMahon*

Verdict

Pros Easy recording; capable editing tools; good output options

Cons Professional price

Overall A capable application with a feature set tailored to the requirements of professional tutorial and demo production

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £227.50

Contact Techsmith

www.techsmith.com

System requirements Windows XP or Vista • DirectX 9 or later • 1GHz processor • 500MB Ram • 115MB of hard disk space

THIRD-PERSON ADVENTURE

Grand Theft Auto IV

Gruesome but engrossing universe with more freedoms than ever



Cars, bikes and boats let you get around at high speed



Assassination comes easy to Nico Bellic

Grand Theft Auto (GTA) IV was the game the American religious right tried to ban last year. The fact that a man was attacked as he queued up to buy this game in Croydon, south London, certainly doesn't do the franchise's reputation any favours.

GTA IV does have a ugly side. Not only can you kill off key characters, but you can also pick up prostitutes and take them on their 'final' journey.

It can sometimes be difficult to see why some games, such as Far Cry 2 and Left 4 Dead, carry their 18-rated certificate. They have their scary shoot-out moments but GTA IV is in a totally different league; there's gratuitous violence, sex, foul language, assassinations and robberies for you to carry out all the time and if you're comfortable doing that in a video game – and you might not be – then GTA IV has an extraordinary environment on offer.

It's defined as a sand-box action-adventure game, where the only thing limiting your movement around the game are the city walls. Cars, motorbikes, speedboats, taxis, trains and helicopters let you whiz around at breakneck speed.

Gone is the surreal nature of previous GTAs, where humour, ludicrous behaviour and bright scenery were key features. Instead, GTA IV features Liberty City (with a strong resemblance to New York) with dark, grimy streets, and business-like criminals.

It also breaks with tradition by making the lead character, Niko Bellic, an eastern-European immigrant with a conscience (although revenge is his preferred business method). He's supposedly in America to visit his bumbling cousin, but it later becomes clear that he has arrived to kill war criminals from his past.

The varied characters and plot are excellent, although maintaining friendships – an important element of the game – is often tiresome. You have to pick people up, take them out to dinner or to a strip club and and return them home, all while you'd rather be completing the next mission.

Other improvements include more realistic driving, so if you make a fast turn you may end up going through the windscreen. It's now easier to get away from the police and, if you go for a drink, you'll get blurred vision and lose some control over your movements.

A superb new multiplayer mode has been added, where you can join up to 32 different players in Liberty City to race, fight, or play cops and robbers.

We expected our mid-range PC with a 3GHz Phenom processor, 4GB of Ram and an Nvidia Geforce GTX 260 graphics card to make the game look super smooth compared with the console versions of GTA IV, where the game is rendered at lowly 1,152x640 and 1,280x720 resolutions on the Playstation 3 and Xbox 360 respectively.

But despite our system's graphics card having four times the peak pixel fill rate of both consoles, GTA looks better on consoles. We had to turn down the resolution to 1,024x768 and just 35 per cent draw distance to get it working smoothly. Odd texture shimmering, occasional crashes and stuttering frame rates suggests not much time has gone into optimising the PC edition.

However, if you own a top-notch gaming PC and have a considerable degree of patience, then GTA IV offers 50 hours of exciting and engrossing gameplay in a very detailed universe.

Emil Larsen

Verdict

Overall An extremely impressive environment with a lot of freedom, but it plays better on consoles

Overall ★★★★★

Price £34.99

Contact Rockstar

www.rockstargames.com

System requirements Intel Core 2 Duo 1.8GHz or AMD Athlon X2 64 2.4GHz • 1.5GB Ram • 16GB hard drive space • Nvidia Geforce 7900 or ATI Radeon X1900 with 256MB Ram

FIRST-PERSON SHOOTER

Far Cry 2

Battle through 50 square kilometres of African war



The long flammable grass lights up a treat



Diamonds are a mercenary's best friend in war-torn Africa

Brand power is the only reason Far Cry 2 is called what it is, since it has a different development team, a different environment, a completely different set of characters and a different storyline to the original game.

Far Cry 2 does, however, build on the original Far Cry's lush graphics and large free-ram environment, for which the original game received high praise. Graphics aren't as crisp or detailed as those found in Crysis, but the sheer size of the open world makes this the biggest first-person shooter environment we've ever encountered.

You play a mercenary who is sent into an unnamed war-torn African country, tasked with killing an arms dealer known as The Jackal.

But things quickly go pear-shaped when you get malaria and your target disappears. With the mission on hold, your focus is to get anti-malarial pills and collect diamonds – the currency in African wars – to buy new weapons.

After a brief introduction, you can roam free and complete any mission you please. Soldiers on both sides of the conflict take shots at you wherever you go, so building relationships with other mercenaries is very important. Encounters with the mercenaries, enemy soldiers and a journalist are all sprinkled in with some excellent voice acting.

The biggest innovation in Far Cry 2, however, is the long flammable grass present across the entire environment. Throwing Molotov cocktails near enemy bases means you can fry adversaries without even pulling a trigger.

Realism is one of Far Cry 2's main goals and the sheer size of the open world certainly cements it, since

going from one point to the next regularly takes 20 minutes by car (with a few gun battles along the way, of course). Guns jam as they age, so you need to buy new ones, and cars regularly need fixing. Instead of health packs that magically make you better, you have to perform gruesome battlefield surgery on yourself. Alternatively, you can inject yourself with some mystery healing fluid, although that barely seems more realistic than the old system.

There are serious flaws in Far Cry 2's realism in other areas too. Although the world is massive, the scenery is simply repeated all over. This includes the same shop owner copied and pasted into every gun shop across the country. It's also not clear how you've managed to come by a useful map showing where every enemy outpost is.

Combative outposts are packed too closely together and there's an eerie lack of civilians – apparently they've all fled, but you'd expect a handful of poor sods to be left behind.

If you manage to complete the single-player mode (there's over 50 hours game play), then there's also a relatively poor multiplayer option.

Our biggest complaint with Far Cry 2, however, is that it crashed to desktop every 30 minutes to an hour on one test system, but not on another. A 64-bit copy of Vista appeared to be one potential problem, but the internet is rife with users experiencing similar problems in other versions of Windows.

Far Cry 2 is an ambitious game where the developers have overstretched themselves. With a bigger budget and an emphasis on quality rather than quantity, Far Cry 2 would have been an excellent game, instead of an average one.

Emil Larsen

Verdict

Overall A lot of ambition and a decent storyline, let down by bugs and a repetitive environment

Overall ★★★★★

Price £34.99

Contact Ubisoft Far Cry 2

System requirements Pentium 4 3.2GHz or Pentium D 2.66GHz or AMD Athlon 64 3500+ or better • 1GB Ram • Nvidia Geforce 6800 or ATI Radeon 1650 with 256MB Ram • 12GB hard drive space

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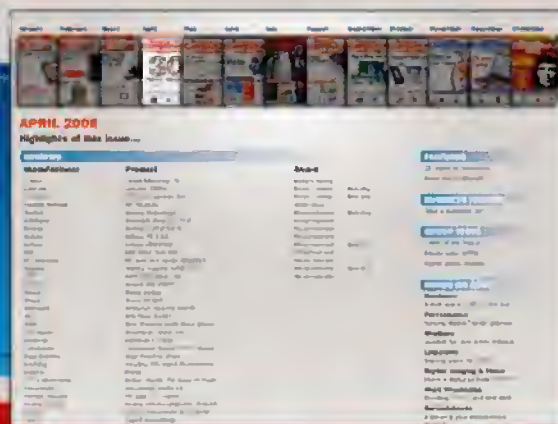


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Akasa Elite external hard drive enclosure

Price: £28.48

www.dabs.com

Overall: ★★★★★

The Elite from Akasa is an external hard drive enclosure that stands out from the crowd, thanks to its leather finish. Under the leather is an aluminium drive enclosure that has both e-Sata and USB interfaces. Everything you need to get started is in the box – both types of data cable and an AC power adapter.

Toshiba MK4058GSX 2.5in hard drive

Price: £85.20

www.span.com

Overall: ★★★★★

If you're running out of space on your notebook or netbook, or you want a large drive for that ITX-based media PC, then you should have a look at Toshiba's MK4058GSX drive – a 400GB 2.5in drive that uses two platters (discs) to reach its capacity. It has a 5,400rpm spin speed and 8MB cache.



Lacie USB2.0-FW800 PCI expansion card

Price: £74.90

www.lacie.com/uk

Overall: ★★★★★

Lacie has just released a series of five useful PCI add-in cards, offering combinations of data ports for external devices. One of the five is the USB2.0-FW800 PCI combo card. Easy to install, the board features three USB2 ports and single Firewire 400 (400Mbps/sec) and Firewire 800 (800Mbps/sec) ports.



**Kingston Hyper KHX16000D3T1K3/3GX
PC3-16000 DDR3 memory kit**

Price: £329.99

www.play.com

Overall: ★★★★★

Intel's latest X58 chipset technology supports triple-channel DDR3 memory and manufacturers haven't been slow in bringing out three-module kits to support the new chipset. One of the first we've seen is from Kingston – the KHX16000D3T1K3/3GX PC3-16000 DDR3 kit – is part of its performance Hyper range.



**Amphibix h2O Waterproof
armband for iPod Nano**

Price: £18

www.watergear.co.uk

Overall: ★★★★★

If your idea of relaxing includes being in or near water, then the Amphibix range of waterproof armbands for holding your iPod or iPod Nano in a 100 per cent waterproof environment may just catch your attention. The fully adjustable armband is good up to depths of 3.6m and includes a Cleartouch window to allow you to operate touch and click wheels.



Akasa AK-967 Nero CPU cooler

Price: £29.99

www.overclockers.co.uk

Overall: ★★★★★

Akasa's latest cooler – the AK-967 – supports Intel's latest Socket 1366 for the new Core i7 processors, as well as the previous Socket 775 and AMD's AM2 Socket, with all the mounting brackets for each socket included in the box. Cooling is provided by three 8mm high-capacity heatpipes that run through aluminium cooling fans.

**Traxdata NSSD-S25-64-C04m Ultra-S
Plus solid state drive**

Price: £689.99

www.traxdata.com

Overall: ★★★★★

More and more SSDs (Solid State Drives) are finding their way into the shops. One of the latest is the 64GB NSSD-S25-64-C04m Ultra-S Plus from Traxdata, a name more usually associated with optical media. The 2.5in drive uses ultra-fast, single-layer cell technology, which stores one bit of data per memory cell.



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How we test

Performance testing is an important part of *PCW*'s reviewing process, and to obtain our authoritative results we use the UK's best PC testing resource. Here we explain why you can trust our results and give you a tour of our most frequently used benchmark programs

At the core of our PC performance tests are industry-standard benchmarks from Bapco and Futuremark. Sysmark 2007 Preview is the latest Vista-compatible version in a long line of Bapco benchmarks and it allows us, for the first time, to compare the application performance of Windows XP and Windows Vista-based systems with the same benchmark. It tests real-world application performance by running a series of scripts to mimic authentic user tasks. It loads and runs full versions of 14 market-leading applications, which are:

- Adobe After Effects 7
- Adobe Illustrator CS2
- Sketchup 5
- Adobe Photoshop CS2
- Autodesk 3ds Max 8
- Sony Vegas 7
- Macromedia Flash 8
- Microsoft Excel 2003
- Winzip 10
- Microsoft Outlook 2003
- Microsoft Powerpoint 2003
- Microsoft Word 2003
- Microsoft Project 2003
- Microsoft Windows Media Encoder 9 series

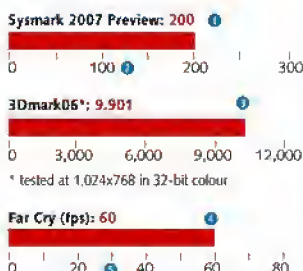
Note that scores from Sysmark 2007 Preview are not comparable to scores from previous versions of Sysmark. All scores are relative to the Sysmark reference machine, which scores 100 (see below for details).

In *PCW*'s labs, our staff have over 20 years of combined testing experience. We know all the perils and pitfalls of practical benchmarking, and we contribute to the development of industry-standard benchmarks through our full membership of Bapco (www.bapco.com), the non-profit benchmark consortium. Listed below are the main benchmarks we use for testing PC systems and components

- Bapco Sysmark 2007 Preview – an application-based benchmark that tests real-world system performance.
- Futuremark 3Dmark06 – the latest version of 3Dmark that tests DirectX 3D graphics performance.
- Games – we use built-in benchmarks in Far Cry and Fear to see how graphics cards perform in a real-world games.
- Futuremark PCmark05 – a synthetic benchmark used to test the performance of a PC's major subsystems.
- Test beds – we use standardised AMD and Intel-based test rigs to test components and peripherals.

There's more information about our testing procedures and benchmarks on our Labs site at www.reportlabs.com/testbed/bguides/benchmarks.php.

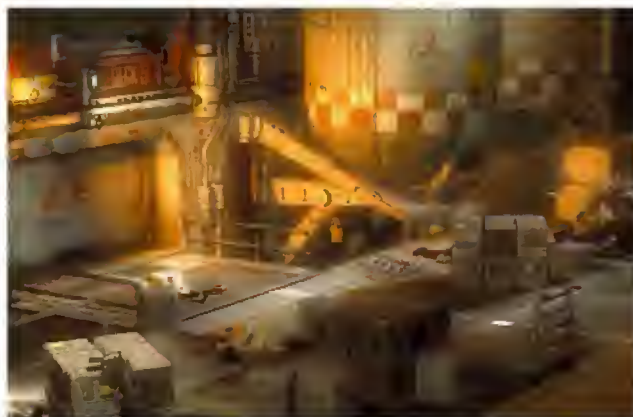
Performance



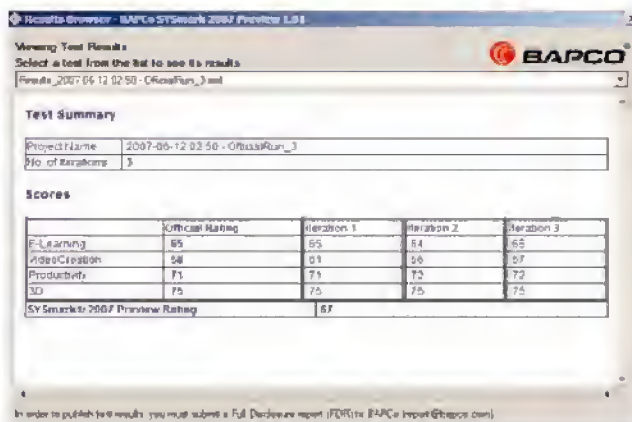
- ① A score of 200 indicates that the system is twice as fast as the reference PC.
- ② The reference PC (Intel Core 2 Duo E6300 1.8GHz, 1GB Ram) scores 100.
- ③ An Nvidia Geforce 8600GT would score in the region of 9,900.
- ④ Fear: A score of 60fps (frames per second) or higher is most desirable.
- ⑤ A result of 30fps or above means the machine can produce playable frame rates at the tested resolution.



PCmark05 measures memory, processor, graphics and hard drive performance



3Dmark06 is used to test 3D graphics performance



Sysmark 2007 Preview tests real-world performance using common apps

Best Buys



Your one-stop guide to the best-value products reviewed by PCW

With countless products available, shopping around for a new PC, peripheral or software package isn't an easy task, but with our Best Buys guide, you can make a quick purchase with confidence. We've split our Best Buys into 40 of the most popular categories, covering everything from desktop and notebook PCs right through to digital cameras and software.

Every month we'll update our Best Buys to include our most recent reviews and check the current pricing, although that's not to say you won't find a bargain online (try our price comparison site at

www.pcw.co.uk/bestprices). You'll also find the date of the magazine in which the product was first reviewed, along with an alternative suggested product for that category. If the Best Buy entry has a web code listed alongside it, this means you can read the full product review on our website. Simply head online and use the format [www.pcw.co.uk/\[web code\]](http://www.pcw.co.uk/[web code]) – for example, www.pcw.co.uk/2208243.

Each Best Buy product has gone through our rigorous testing and reviewing procedures, making this your one-stop guide to the best products on the market.

BUDGET PC



Zoostorm 3364-2354

Price: £499

Reviewed: July 2008

www.pcnextday.co.uk

Web code: N/A

This PC comes with a quad-core Intel Q6600 processor, 2GB of Ram, a 250GB hard disk and a 19in TFT. The only downside is the integrated graphics, but with expansion opportunities inside the case, this can be rectified.

HIGH-END PC

PC Specialist Fusion 4870X2

Price: £1,499

Reviewed: December 2008

www.pcspecialist.co.uk

Web code: N/A

A rare AMD-based system, this PC is perfect for high-end gaming and video editing. It features a dual-core 4870X2 graphics card, X4 9950 quad-core CPU and 8GB of Ram. You also get a decent 24in TFT.



ALTERNATIVE

Chillblast Fusion Sentinel

£699 www.chillblast.com Web code: 2211955

A well-built, quiet PC with a quad-core processor, good all-round performance and space inside for future upgrades. It also features a Geforce 8800GT graphics card.

ALTERNATIVE

Wired2Fire Diablo Extreme

£3,299 www.wired2fire.co.uk Web code: N/A

A fast and well-featured machine based on the new Core i7 architecture. It's relatively quiet with plenty of future-proofing.

BUDGET NOTEBOOK



Samsung Q210

Price: £675.98

Reviewed: November 2008

www.samsung.com/uk

Web code: N/A

It's not suited to gaming, but this notebook has all the benefits of Intel's latest Centrino 2 platform. Powered by a T8400 Core 2 Duo processor clocked at 2.26GHz, it's a stylish workhorse computer.

HIGH-END NOTEBOOK

HP Pavilion dv7-1000ea

Price: £899

Reviewed: December 2008

www.hp.com/uk

Web code: N/A

Based on Intel's Centrino 2 platform, this notebook combines stylish design with high-end performance. It also has a Blu-ray reader and a crystal-clear 17in display. It's heavy, but as a desktop replacement it's perfect.



ALTERNATIVE

Hi-Grade D7000SRL

£499 www.hi-grade.com Web code: N/A

With a stylish chassis, decent performance, Bluetooth and HDMI, you get a lot for your money with this 15.4in notebook.

ALTERNATIVE

Acer Aspire 8920G

£1,289.99 www.acer.com Web code: N/A

Thanks to a recent price drop, this 18.4in notebook is now even better value for money. Highlights include a 2.5GHz processor and Blu-ray drive.

WINDOWS HOME SERVER



Fujitsu Siemens Scaleo 1900

Price: £469

Reviewed: July 2008

www.fujitsu-siemens.co.uk

Web code: N/A

It might not be the most attractive piece of computer kit, but this Windows Home Server from Fujitsu Siemens has good read-and-write performance and comes with some useful added extras.

ALTERNATIVE

Belinea 0.center

£386.58 www.belinea.com Web code: N/A

With a striking design and solid performance, the 0.center is a great little Windows Home Server with easy hard-disk access and good diagnostic tools.

ULTRA-MOBILE PC

MSI Wind

Price: £336.05

Reviewed: Christmas 2008

www.msicomputer.com

Web code: N/A

This netbook offers good battery life and a larger screen than many other models. With 1GB of memory and a 160GB hard drive, the MSI Wind is well specced all round and represents great value.



ALTERNATIVE

Acer Aspire One

£200 www.acer.co.uk Web code: 2220487

This portable notebook combines a decent keyboard, clever storage system and a great design. Its Intel Atom processor runs at 1.6GHz, backed up by 512MB of Ram.

BUDGET GRAPHICS CARD



Palit GeForce 9600GT 512MB Sonic

Price: £121.32

Reviewed: June 2008

www.palit.biz

Web code: N/A

The G94 GPU used by this card is basically a cut-down version of the G92 8800 and GTS cards, but with fewer, yet faster-clocked, stream processors.

ALTERNATIVE

Asus E4N2400Pro

£32.89 <http://uk.asus.com> Web code: N/A

This card features low power consumption and, although not as fast as the Radeon HD 2400 Pro cards, it's cheap and has some impressive video capabilities.

HIGH-END GRAPHICS CARD

Sapphire Radeon HD4870

Price: £181.76

Reviewed: October 2008

www.sapphiretech.com

Web code: 22233563

A fast card at a great price. To give an idea of the rendering potential of this card, it managed 46 frames per second with 4x anti-aliasing and 4x antroscopic filtering turned on at 1,280x1,024 resolution.



ALTERNATIVE

Zotac GeForce GTX 280 AMP Edition

£366.27 www.zotac.com Web code: 2223078

Zotac's version of the GTX 280 is the fastest single-core graphics card we've tested. The board also supports Nvidia's Hybrid Power technology.

TFT (17-22IN)



Philips 220WS8

Price: £189

Reviewed: February 2008

www.philips.co.uk

Web code: N/A

This 22in TFT screen has superb image quality, is evenly lit and with a power draw of just 35W is also extremely efficient. The icing on the cake is Philips' excellent pixel policy. A great buy.

ALTERNATIVE

Viewsonic VX2255

£259 www.viewsoniceurope.com Web code: N/A

The VX2255's clear and excellent pixel policy, along with its multimedia features, make it great value at £259, despite the distinctly average image quality.

TFT (24IN+)

Philips 2408W8

Price: £309.95

Reviewed: September 2008

www.consumer.philips.com

Web code: N/A

This 24in screen has a professional feel and is well suited to any application where you need to be sure that your on-screen colours are accurate. It also comes at a good price and features HDCP support.



ALTERNATIVE

Iiyama B2403WS

£299.60 www.iiyama.co.uk Web code: N/A

The 24in B2403WS from Iiyama offers a good balance of performance and features, and is suitable for a wide range of uses.

SMARTPHONE



Apple iPhone 3G

£ from free

Reviewed: December 2008

www.apple.com/uk

Web code: N/A

It might not have as many features as some of its rivals, but the iPhone benefits from outstanding ease of use, a superbly stylish design, 3G (new to this version) and an online applications store.

ALTERNATIVE

RIM BlackBerry Bold

£ from free <http://eu.blackberry.com> Web code: N/A

Once the sole domain of business users, the BlackBerry now features a similar level of consumer features as high-street phones.

SAT NAV

Tomtom Go 720

Price: £309

Reviewed: February 2008

www.tomtom.com

Web code: N/A

You're paying a bit more than you might for a number of perfectly capable rivals, but you get so much for your money with the Tomtom Go 720, including a customisable display and great performance on the road.



ALTERNATIVE

Mio 620t

£269 www.mio-tech.be Web code: N/A

Mio's new software is impressive and, considering the range of features, it's priced competitively. The maps look great and performance is equally good.

DIGITAL CAMCORDER



Canon HV30

Price: £700

Reviewed: November 2008

www.canon.co.uk

Web code: N/A

With fantastic picture quality, this camcorder is the one to buy if you're looking to make the most out of your HD television. It also has a great selection of manual controls and lets you edit your footage.

ALTERNATIVE

Panasonic HDC-SD9EB

£450 www.panasonic.co.uk Web code: N/A

Able to capture decent HD footage yet remaining light, portable and cheap, this Panasonic camcorder is a great buy for those on a budget.

DIGITAL CAMERA

Samsung NV24HD

Price: £249

Reviewed: October 2008

www.samsungcamera.com

Web code: N/A

With excellent build quality, a 10.2-megapixel CCD and wide-angle 24mm lens, this digital camera is perfect for taking detailed outdoor shots. It also features 720p movie recording, so you can capture video in high definition.



ALTERNATIVE

Pentax Optio A40

£219 www.pentax.co.uk Web code: N/A

This 12-megapixel compact camera houses some great features, not least of which is the excellent image stabiliser. It also shoots great photos.

PORTABLE MEDIA PLAYER



Apple iPod Nano

Price: £109

Reviewed: December 2008

www.apple.com/uk

Web code: N/A

Stylish and thinner than ever before, the new iPod Nano features motion sensors, allowing it to detect whether you're holding it in portrait or landscape mode, and a quick shake activates the shuffle mode.

ALTERNATIVE

Sony NWZ-A815

£89 www.sony.co.uk Web code: 2203060

It might lack some of the extra features found on rival players, but this Sony model excels in terms of audio quality and is easy to navigate.

MEDIA STREAMER

D-Link DSM-330

Price: £135

Reviewed: October 2008

www.dlink.co.uk

Web code: N/A

With its excellent usability and simple setup procedure, this device makes sharing your media collection simple. It features an HDMI port, can output 720p video and performs extremely well.



ALTERNATIVE

Archos TV+

£249 www.archos.co.uk Web code: 2210545

With a 250GB hard disk, this device not only streams media across a network, but can also store your entire video, music and photo collection locally.

LASER PRINTER



Brother HL-2170W

Price: £149

Reviewed: March 2008

www.brother.co.uk

Web code: 2207225

If you're looking for a good-quality monochrome laser printer for general home use, this Brother model is definitely worth considering. It's fast, compact and even has a wireless adapter. A bargain at this price.

ALTERNATIVE

Lexmark X500n

£301 www.lexmark.co.uk Web code: N/A

An amazingly good-value laser printer, considering it's not only colour but also includes a scanner, allowing you to scan, copy and print at speed.

PHOTO PRINTER

Canon Selphy CP750

Price: £110

Reviewed: October 2007

www.canon.co.uk

Web code: 2193769

It's a little bulky when in use, but this dedicated photo printer can produce high-quality prints in under 70 seconds. And a 2.4in display allows you to perform basic image editing before printing.



ALTERNATIVE

Sony DPP-FP90

£150 www.sony.co.uk Web code: 2196751

It's not particularly cheap to run, but this printer produces high-quality photos from a variety of sources and is reasonably fast as well.

MULTIFUNCTION PRINTER



Canon Pixma MP610

Price: £139

Reviewed: November 2008

www.canon.co.uk

Web code: N/A

Canon's compact and stylish MFD has a decent mix of top-notch quality and fast printing and can also print directly to DVDs. Running costs are relatively low, which is surprising given the low price tag.

ALTERNATIVE

HP Photosmart C8180

£298.45 www.hp.com/uk Web code: N/A

An expensive, but hugely impressive MFD, the Photosmart C8180 is packed full of useful features and is also incredibly easy to use.

NETWORK-ATTACHED STORAGE

Qnap TS-209

Price: £254

Reviewed: Christmas 2007

www.qnap.com

Web code: 2200223

If you're after a Nas device that does more than just share files over your network, this is it. You can schedule Bittorrent downloads, stream media to UPnP devices and install your own drives in it.



ALTERNATIVE

Acer Aspire EasyStore

£499 www.acer.co.uk Web code: 2206105

This Nas device features 2TB of storage (other sizes are available), along with wireless, so you can place it anywhere in your home.

POWERLINE NETWORKING



Solwise NET-PL-200AV Push

Price: £50

Reviewed: March 2008

www.solwise.co.uk

Web code: 2207035

You'll need at least two of these to get your powerline network running, but they're the best around. Based on the Homeplug AV standard, they're fast, resilient to electrical noise and great value for money.

ALTERNATIVE

Devolo Dlan 200 AV

£149 www.devolo.co.uk Web code: N/A

Small and well designed, these Devolo powerline devices use the Homeplug AV standard and have pre-programmed quality of service rules built in.

WIRELESS ROUTER

Linksys WAG325N

Price: £99.99

Reviewed: May 2008

www.linksys.com

Web code: N/A

It might look a little unconventional, but this Draft-N router from Linksys performs extremely well. It also features some sophisticated tools, has VPN support and allows the creation of virtual wireless networks.



ALTERNATIVE

Solwise Engenius Wireless-N Gigabit Router

£120 www.solwise.co.uk Web code: N/A

It might be a little pricey, but this router performed well in our tests and comes complete with some advanced network filtering tools.

EXTERNAL HARD DISK



CMS V2ABS-CE-120

Price: £175

Reviewed: Christmas 2007

www.cmsproducts.com

Web code: 2202396

A portable USB2 external hard disk that weighs a mere 150g and comes with built-in 256-bit AES encryption. Inside the case sits a 2.5in 120GB 5,400rpm SATA notebook hard disk.

ALTERNATIVE

Western Digital Mybook Studio

£204 www.westerndigital.com Web code: 2206075

This stylish 1TB external disk comes with USB2, Firewire 800/400 and eSata interfaces for ultimate flexibility.

INTERNAL HARD DISK

Western Digital WD10EACS

Price: £185

Reviewed: January 2008

www.westerndigital.com

Web code: 2203061

This disk features four 250GB platters to provide 1TB of storage. It includes some advanced technology such as Intelliseek, which calculates optimum seek speeds to lower noise, vibration and power usage.



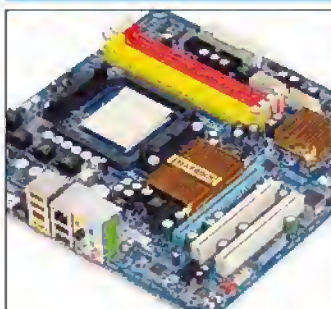
ALTERNATIVE

Toshiba MK2035GSS

£79 www.toshiba.co.uk Web code: 2203064

Weighing just 98g, this 200GB 2.5in SATA hard disk is perfect for increasing the storage capacity of your notebook.

AMD MOTHERBOARD



Gigabyte GA-MA78GM-S2H

Price: £60

Reviewed: June 2008

www.giga-byte.co.uk

Web code: N/A

With a wide range of ports, including eSata, and a good selection of options in the Bios, this is a great AMD board. Finally, after two years of losing to Intel, AMD's engineers have a winner on their hands.

ALTERNATIVE

EQS AB15-RS690MKM

£46 www.eqsc Computers.com Web code: 2204803

The cramped design limits upgrade potential, but it's a keenly priced AMD motherboard that features an on-board HDMI port for HD video.

INTEL MOTHERBOARD

Asus P5E-VM HDMI

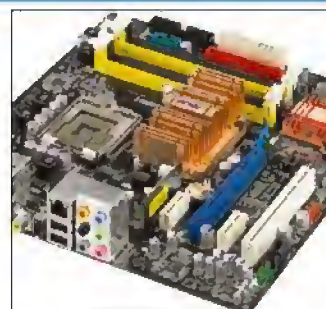
Price: £81

Reviewed: June 2008

<http://uk.asus.com>

Web code: N/A

This board has a great range of features. With the integrated graphics enabled, we comfortably overclocked it to 3GHz with our 2.4GHz Core 2 Quad Q6600 attached, so enthusiasts should take note of its capabilities.



ALTERNATIVE

Gigabyte GA-G31MX-S2

£53 www.giga-byte.com Web code: 2202711

Considering the price, you get plenty of features on this Intel board, including Intel's G31 Express chipset and ICH7 Southbridge.

PC CASE



Hiperr Osiris

£79.90

Reviewed: November 2008

www.hipergroup.com

Web code: N/A

Despite its low price, this case features terrific build quality. And with easy-to-use latches, swapping out components is a cinch. It comes with four 3.5in and five 5.25in bays, and also looks great.

ALTERNATIVE

Akasa Omega

£139.81 www.akasa.co.uk Web code: N/A

Excellent build quality and some interesting design features make this a great case for those who are often changing components.

POWER SUPPLY

Akasa Powermax 1000

Price: £135.11

Reviewed: March 2008

www.akasa.co.uk

Web code: 2207736

This 1,000W power supply has two +12V rails and its single 135mm dual-ball-bearing fan makes it a lot quieter than you would expect. It also comes with a variety of power connectors.



ALTERNATIVE

Enermax Galaxy 1000W

£233.83 www.enermax.com.tw Web code: 2164011

The 1,000W Enermax Galaxy power supply will suit those with SLI graphics and other power-sapping components, but it comes at a fairly high price.

OFFICE SUITE



Microsoft Office 2007

Price: £357

Reviewed: May 2007

www.microsoft.com

Web code: 2183475

The new interface to Office is something you'll either like or loathe. We like it, but upgrading comes at a price, both in cash and in effort. Despite this, it's still the leader in office productivity software.

ALTERNATIVE

Corel Wordperfect X3

£276 www.corel.co.uk Web code: 2149856

This latest version of Corel's office suite includes tools such as PDF exporting, along with improved compatibility with other office applications.

SYSTEM UTILITY

Acronis True Image 11

Price: £39.99

Reviewed: April 2008

www.acronis.co.uk

Web code: 2208669

True Image 11 is an excellent backup and recovery solution that offers an unprecedented level of control over disk cloning, scheduled backups and secure file deletion. And, despite the range of features, it's easy to use.



ALTERNATIVE

Paragon Hard Disk Manager

£29.99 www.paragon-software.com Web code: 2205339

A comprehensive, all-in-one suite of hard-disk maintenance and backup tools that's easy to get to grips with and comes at a good price.

IMAGE EDITING



Adobe Photoshop Elements 7

Price: £76.38

Reviewed: December 2008

www.adobe.co.uk

Web code: N/A

Some of its advanced tools and special effects might not be required by most amateur photographers, but Adobe Photoshop Elements remains the standard that rival image editors must compete against.

ALTERNATIVE

Corel Paint Shop Pro X2

£79 www.corel.com Web code: N/A

A little more expensive than its main rival, Photoshop Elements, but Paint Shop Pro X2 excels in terms of ease of use.

VIDEO EDITING

Adobe Premiere Elements 7

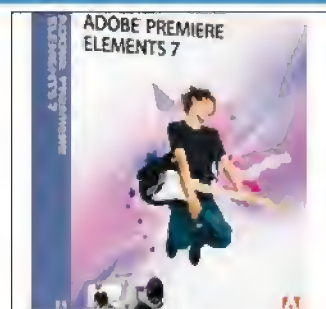
Price: £74.75

Reviewed: March 2009

www.adobe.co.uk

Web code: N/A

With an unbeatable combination of fun and easy-to-use features, including support for HD cameras and Blu-ray burning, together with accessible professional tools, this is an ideal tool for users at all levels.



ALTERNATIVE

Muvvee Reveal

£53 www.muvee.com Web code: N/A

If you're more interested in simply getting good results than in opportunities to tinker, this is an ideal package for home video editing.

PC SECURITY



Bitdefender Total Security 2009

Price: £44.95

Reviewed: January 2009

www.bitdefender.com

Web code: N/A

A comprehensive suite that's easy to use, and has fast scan times and low system overheads. With extra tools including backup and parental controls, this is a good all-rounder.

ALTERNATIVE

Kaspersky Internet Security 2009

£39.99 www.kaspersky.com Web code: N/A

An excellent security suite with top-class anti-virus protection and one-click problem solving.

WEB DESIGN

Adobe Dreamweaver CS3

Price: £393

Reviewed: July 2007

www.adobe.com

Web code: 2186591

Powerful HTML coding and design tools along with CSS templates and Ajax widgets will help non-programmers get started. There's also a big emphasis on CSS, including a CSS Advisor tool for newcomers.



ALTERNATIVE

Microsoft Expression Web

£260 www.microsoft.com Web code: 2185242

Expression Web is a very good web-editing suite if you accept the inevitable Microsoft bias, and features CSS support and a powerful interface.

BUSINESS PC



Dell Latitude D531

Price: £586

Reviewed: October 2007

www.dell.com

Web code: N/A

With a dual-core AMD Turion processor clocked at 1.8GHz, 2GB of Ram and Vista Business, this is a good budget model. It also features a built-in DVD writer, 120GB Sata hard disk and both Wifi and Bluetooth.

ALTERNATIVE

HP Compaq dc7800

£598 www.hp.co.uk Web code: 2207533

The space-saving design of this affordable business desktop is very compelling and it can attach directly to an optional HP TFT screen.

BUSINESS PRINTER

HP Laserjet P1505n

Price: £205.63

Reviewed: June 2008

www.hp.com

Web code: N/A

Compact, stylish and quicker than it looks, this Laserjet from HP is a very capable small-business printer and is stunningly good value to boot. It also features an integrated network interface.



ALTERNATIVE

Zebra P100i

£1,245.50 www.zebracard.com Web code: 2212221

A great device for small businesses needing to print plastic cards in volume. It takes up little desk space and can print in full colour.

NETWORK SECURITY



Smoothwall Smoothguard 1000-UTM

Price: £3,231.25

Reviewed: September 2007

www.smoothwall.net

Web code: 2194393

A comprehensive array of security tools, load balancing and failover facilities, plus extensive reporting options, mean this network security device justifies the high price.

ALTERNATIVE

Webroot Antispyware Corporate

£22.56 www.webroot.com Web code: N/A

This is the per-seat price for a one-year licence, which is great value. It also covers two key client security bases in one go.

NETWORK MANAGEMENT

VMware Thinapp 4.0

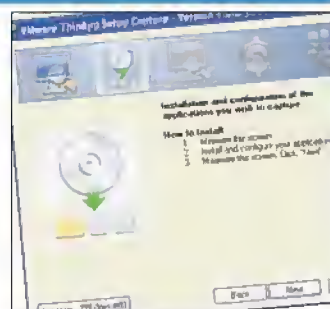
Price: £2,937.50

Reviewed: November 2008

www.vmware.com

Web code: N/A

Although its cost may be an issue for small businesses, Thinapp overcomes many of the issues associated with deploying and managing applications. It features on-demand streaming, USB key deployment and more.



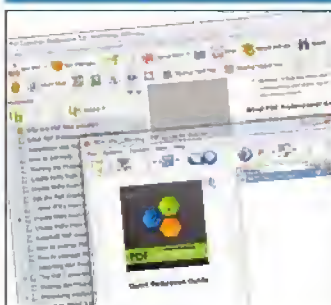
ALTERNATIVE

Prefix IT PrefixNE

Up to £2.94 per PC per month www.prefixit.com Web code: 2205651

Easy to install and use, this network management application allows you to keep track of all the kit on your network and is perfect for small businesses.

COLLABORATION SOFTWARE



Nuance PDF Converter Professional 5

Price: £99

Reviewed: June 2008

www.nuance.co.uk

Web code: N/A

It may often take second billing to Adobe Acrobat, but this latest release is cheaper and just as good - if not better. The only problem is there are so many new tools to learn.

ALTERNATIVE

C2C Archive One Policy Manager

£40 www.c2c.com Web code: 2212370

This is a well-conceived and easy-to-implement exchange storage management tool that can enhance performance and even reduce costs.

BUSINESS ACCOUNTS SOFTWARE

Microsoft Accounting 2008

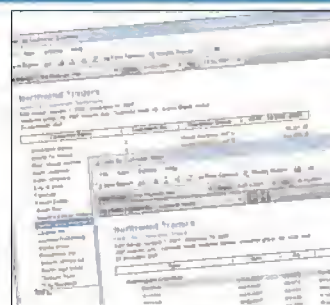
Price: £149

Reviewed: February 2008

www.samsung.co.uk

Web code: 2207529

A late entrant to the UK accounting market, Office Accounting 2008 is easy to use, feature-rich and will shake up the competition. It also offers in-depth integration with Outlook 2007 Business Contact Manager.



ALTERNATIVE

Intuit Quickbooks Pro 2008

£299 www.quickbooks.co.uk Web code: 2203178

A sensible update to what is one of the most accessible and easy-to-master small-business accounting packages around. Syncs with Outlook.



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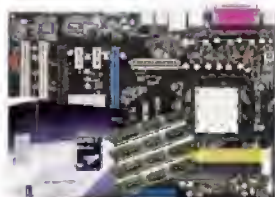
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(CODE PC17)

**ON TEST**

- 90 Adobe Premiere Elements 7
- 91 Corel Videostudio Pro X2
- 92 Cyberlink Power Director 7 Ultra
- 93 Magix Movie Edit Pro 14
- 94 Muvee Reveal
- 95 Pinnacle Studio Plus 12

- 96 Table of features
- 98 Advanced editing Editor's Choice

'Video-editing software has the potential to transform your raw footage and help you make the most of it'

Six-pack for video editors

Which video-editing package can turn you from an amateur to an auteur? Ken McMahon puts you in the frame

Digital video is experiencing something of a golden age at the moment. Tapeless high-definition camcorders and Blu-ray disc burning are entering the affordable mainstream, and dual- and quad-core systems are more than up to the task of processing the large amounts of data that high-definition moving pictures require. It's hard to imagine how things could get better.

But maybe not that hard. Editing software has the potential to transform your raw footage and help you make the most of it. Whether it's family holidays, a documentary project, or commercial spots for a website, your software can make a difference – not just

to the quality of the results, but in the time it takes you to get there and how much (or little) you enjoy the experience.

Our video-editing software group test compares six of the leading consumer video-editing applications on the market today. Most of these applications share a core feature set that includes capture from a variety of sources, including HD camcorders, automated editing, and DVD and Blu-ray authoring. So we'll be paying special attention to what differentiates them in terms of usability and quality of results.

We also take a look at what's available beyond the basics, for those with professional aspirations and a budget to match them.



Adobe Premiere Elements 7

Price £74.75 Contact Adobe 0800 028 0148 www.adobe.co.uk



Above: Premiere Elements 7 provides the choice between a sceneline or 99-track conventional timeline view

Left: Smart tagging assigns content and quality-based keywords to your clips

Adobe has skipped Premiere Elements from version 4 straight to 7 so that it matches Photoshop Elements 7, with which it can be bought as a double package. Elements applications are based on their professional namesakes – in this case Premiere Pro – but are aimed at consumers and hobbyists. They cost less, omit very advanced features and add others that make the task in hand easy and fun.

Premiere Elements allows you to add tags to your clips so you can categorise and search them in the same way you do with your photo library.

Smart tagging takes things a step further, automatically analysing and tagging clips according to their quality. If your clips are out of focus, shaky or dark, they are tagged as such and given a high-, medium- or low-quality rating. Elements also recognises faces in clips and tags them accordingly.

Automatic editing is nothing new, so it's surprising how long it has taken Adobe to get around to including it in Premiere Elements. Adobe has made a decent job of it, though, with a range of well-designed themed templates and user-selectable properties. You can, for example, choose the theme music or add your own and alter the mix between backing music and the video sound track. Premiere Elements includes the Smart Sound Quick Tracks audio loop library.

Instant Movie can do everything for you, but provides scope for your own creative input. You can decide what to put in – opening and closing titles, music, theme content, transitions and effects, titles and DVD menus. You can also constrain the order of clips to the sequence in which they were shot.

Video Merge is another new feature designed to make the program more attractive to novice video

editors. Otherwise known as Chroma-key, or blue/green screen, Video Merge superimposes one video on top of another, making possible everything from weather forecasting to flying carpet tricks. As long as your 'on-top' video is shot against a plain coloured background, Premiere Elements makes this technically tricky compositing effect easy.

The default Sceneline, which displays clip thumbnails, can be toggled to a conventional editing timeline capable of displaying up to 99 video and audio tracks. Video opacity and audio volume can be controlled on-track using 'rubber band' controls, there's a fairly sophisticated audio mixer (though, disappointingly, no 5.1 surround-sound mixing), and a full range of keyframeable effects and transitions.

One of the things Adobe does best is make power features from pro applications available in Elements versions in a more accessible and novice-friendly format. Hence, you can easily produce picture-in-picture effects in this version of Premiere Elements simply by dragging and dropping clips from the media bin onto one another in the Viewer.

Support for recording formats has been extended to include AVCHD; the 'Get Media' button displays icons for DV, DVD, HDV and AVCHD, or other hard disk/memory camcorders as well as digital still cameras, webcams and files on your PC hard drive. On the output side you can burn DVD and Blu-ray discs, output files suitable for playback on handheld devices and upload to Youtube or your own website via FTP.

Despite the jiggery-pokery with version numbers, Premiere feels like a mature consumer video-editing application that has something to offer everyone from the first-time shooter to more serious users.

Verdict

Pros Innovative new features;

accessible professional editing tools

Cons No 5.1 surround-sound editing

Overall Unbeatable combination of fun and easy-to-use features and power tools makes this ideal for users of all levels

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Corel Videostudio Pro X2

Price £67 **Contact** Corel 0800 376 9271 www.corel.co.uk



Left: Videostudio has fewer video tracks than other applications but makes up for it with versatile overlay transitions

Below: Painting Creator can produce animated paint-on overlays



This is the second release of Videostudio under Corel's stewardship, having acquired long-time video application developer Ulead in 2006.

Despite the Pro X2 tacked on to the title, this application is aimed squarely at beginners and casual shooters, with an emphasis on ease of use.

Corel produces different versions with different price tags, but only the bundled software applications differ, not the core features of the program itself. The standard edition reviewed here includes Corel's Win DVD software player; the Ultimate Edition, which costs an extra £13, includes Win DVD 9 Plus Blu-ray, which can play back Blu-ray discs, as well as DVD Copy 6 Plus and Steinberg Wavelab LE 6.

To its credit, Corel hasn't messed about with the Videostudio workspace, a seven-tabbed workflow-oriented layout. There is one improvement, though: you can now resize the three main elements of viewer, library and storyboard/timeline.

You can work through the tabs in order – Capture, Edit, Effect, Overlay, Title, Audio and Share – or freestyle. Selecting a tab provides the tools and content for a given task in the library panel.

In common with every other application bar one (Muvue Reveal) in this group test, Videostudio offers a choice of timeline or storyboard editing. The timeline has two video tracks, two title tracks, a voiceover narration track and a backing music track.

This might seem a bit meagre, but the two title tracks provide plenty of scope for graphics as well as text overlays, and a new feature extends the scope of compositing effects by allowing you to add transitions between overlays. You can, for example, add dissolve or other transitions between picture-in-picture overlays.

Videostudio has a decent range of effects and transitions. Soft-edged mask transitions were added in version 9 and this version includes New Blue film effects – a suite of five customisable film effect filters that are a massive improvement on the Videostudio old film filters. Corel has also added new overlay objects, frames and Flash animations.

The other major new addition to this version is the Painting Creator, which is used to paint effects directly onto clips in real time – a process known as rotoscoping. The Painting Creator opens in a separate window with the selected movie clip on the timeline as a background. Using one of several adjustable brushes, your strokes are recorded in an animated sequence that is saved as a separate clip with alpha transparency. This clip can then be added to an overlay track.

Videostudio offers plenty of labour-saving features. DV Quickscan zips through a DV tape providing a preview of the contents so you can decide what to capture. A DV-to-DVD wizard automatically records the contents of a DV tape onto a DVD, complete with chapters, menus and a template-based movie wizard.

It has good support for other formats, including AVCHD. HD editing can put a strain on even the fastest systems, but Videostudio's Smart Proxy system keeps things moving along by using low-resolution preview clips, then replacing them with the full-resolution clips prior to output. So, if you've just bought an HD camcorder and don't have change to spare for a PC upgrade, Videostudio is an ideal choice.

On the output side, Corel has added Youtube and iPhone export to Videostudio's extensive share options and the program has excellent DVD-authoring modules, though Premiere Elements does it marginally better.

Verdict

Pros Smart Proxy HD editing; rudimentary rotoscoping

Cons Limited customisation options

Overall Good all-rounder, well suited to those moving up to HD from SD

Features ★★★★★

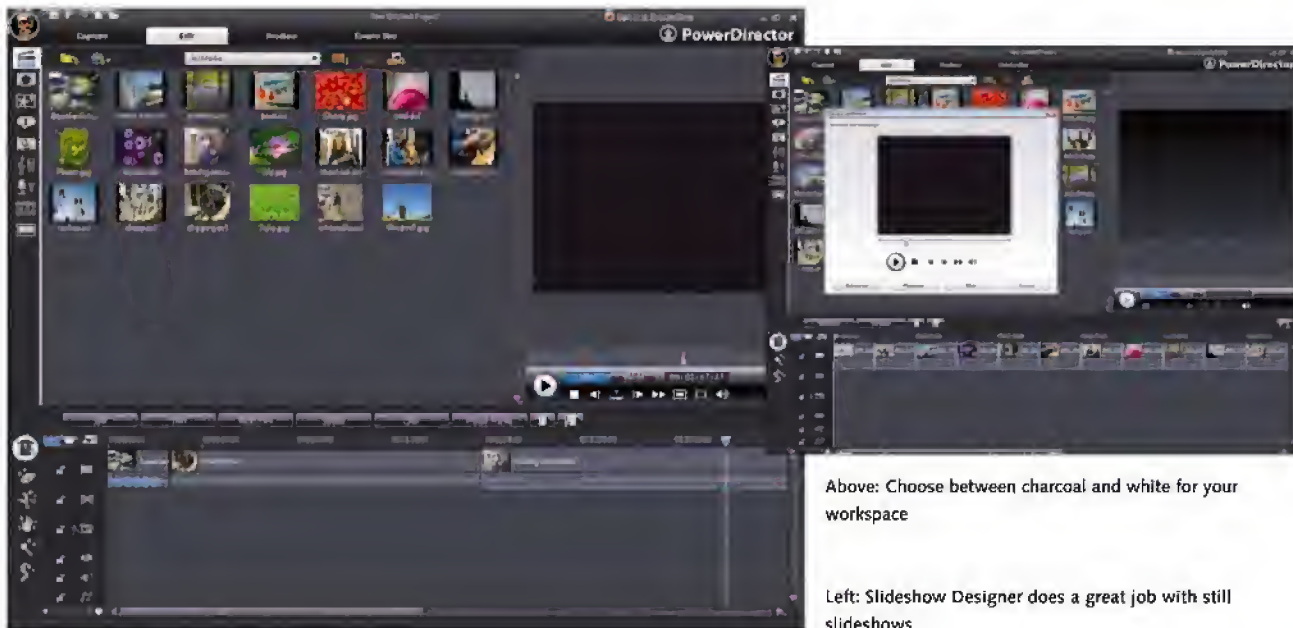
Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Cyberlink Power Director 7 Ultra

Price £58.49 Contact www.cyberlink.com



Above: Choose between charcoal and white for your workspace

Left: Slideshow Designer does a great job with still slideshows

Cyberlink isn't the only application developer to produce more than one version of its video-editing program. Power Director 7 Ultra adds Blu-ray writing and AVCHD output, but at nearly double the price of the Deluxe edition.

Power Director's workspace follows the popular three-panel convention used by Corel Videostudio, Pinnacle Studio and others with a library window, a storyboard/timeline and a preview window. The only striking difference between this and earlier versions is that Cyberlink has opted for a fashionable charcoal-grey colour scheme. As with Videostudio, you can change the proportions of the panels, but only within narrowly defined limits.

Another common feature is the storyboard/timeline workspace. Power Director's timeline contains tracks for video, effects, titles, voiceover narration and music. There's also a track for adding picture-in-picture (PiP) overlays and this version gives you the option of adding five extra PiP tracks, making six in total.

PiP tracks can be used to superimpose clips or add from Power Director's PiP Objects 'room'. These include editable frames, animated and static objects. Using the PiP Designer you can edit the colour and appearance of motion objects, apply preset motion paths and create your own custom motion paths using keyframes. You can upload and share your custom PiP designs and other content to Cyberlink's Directorzone site.

Cyberlink has sourced other free content in the form of still images from Flickr and audio clips from Freesound used under the Creative Commons licence. You can search for clips from both sites from a button on the toolbar. You don't need a Flickr account, but you have to register with Freesound to access audio clips.

Like PiP objects, effects filters have their own library – the Effects Room. Other libraries – rooms – include the title room, transition room, voiceover recording room, audio-mixing room, chapter room and subtitle room.

Power Director's Magic tools are quite original. Accessed via a set of large icons next to the timeline, these automate common tasks and range from Magic Clean, which enhances image quality, reduces noise and improves audio, to the Magic Movie wizard, a themed template-based automated editing wizard. There's also Magic Music, Magic Cut, Magic Fix and Magic Style.

The Magic tools are a good way for novices to get results quickly, but in the absence of any guidance or explanation, you don't learn much. Another gripe is that for anything longer than a couple of minutes, Magic Movie and Magic Style take a long time to analyse the footage and make something out of it.

The new Slideshow designer is far superior, both in use and what it produces, to the Magic tools. It does a similar thing to Magic Style, but with still images rather than video clips, arranging them using a style template and motion graphics to produce a slideshow movie clip complete with backing music. It's quick, easy to use and produces first-rate slideshows.

As an introduction to video editing you could do a lot worse than Power Director 7. It has a good range of editing tools (including some we haven't mentioned, such as subtitling) and new features such as extra video tracks, Keyframeable effects and 5.1 surround-sound support are all taking it in the right direction.

If you want to progress, it doesn't offer the same scope as most of the other applications, though, and the price premium for Blu-ray and HD output is, in our view, much too high.

Verdict

Pros Good PiP effects; great slideshow editor

Cons Little scope for progression; HD price premium

Overall Does the job, but little to set it apart from the crowd

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

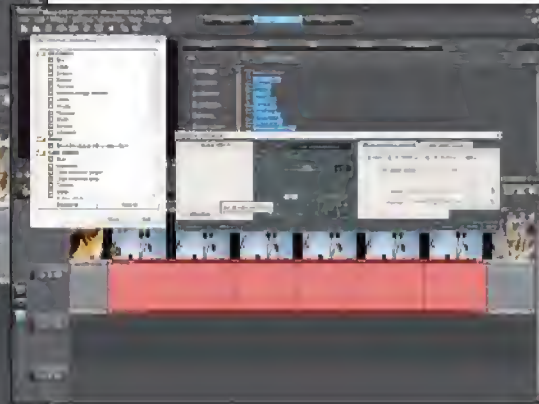
Magix Movie Edit Pro 14

Price £59.99 Contact www.magix.com



Left: Movie Edit Pro offers three alternative timeline views, including a storyboard and scene overview

Below: Advanced features include keyframing – but it's complicated



Movie Edit Pro manages to squeeze in a lot of features and some powerful editing tools for a reasonable £59.99. Included in the price is Mufin Music Finder – a library of customisable audio loops – and Magix Photo Manager.

Movie Edit Pro is available in two versions: the Plus version reviewed here costs £59.99; and the Classic version, which costs £39.99 and has fewer timeline tracks and limits some of the other features found in the Plus version. The installer offers the choice of a light or dark interface style, but in every other respect the workspace is identical – organised into three tabbed sections: Record, Edit and Burn. The first is used to capture video from the usual sources, including DV and HDV camcorders and analogue devices.

There's also the option to duplicate CDs and DVDs and to access Magix TV and Media Centre, a separate personal video recorder (PVR) and media manager application. While we're all for including extras, adding them to the capture interface, where for most people they'll just add to the clutter, isn't such a great idea.

The editing workspace is busy, but well laid out in the de facto standard three-way split. Movie Edit Pro goes one better than most other applications in offering a 'scene overview' in addition to storyboard and timeline views. You can use this to organise and arrange clips, photos, titles and any other content in a linear fashion without worrying about timelines, transitions or any other editing paraphernalia.

The timeline itself can accommodate a maximum of 99 tracks, but when you add a clip its video and audio tracks are treated separately, occupying two tracks. Even so, 99 is a generous allotment, but we couldn't see the sense in the default display showing 32 empty

tracks. Unlike Videostudio and Power Director you can't drag to adjust the proportions of the interface elements so, unless you're using multiple tracks from the off, a lot of screen space is wasted.

The basic editing tools are well designed and easy to use. The Media Pool screen segment is tabbed to provide access to transitions (Fades), titles, video effects filters and motion effects. The sheer quantity of effects and controls is impressive, ranging from single-click correction filters through preset animated effects to motion controls for picture-in-picture effects.

There's plenty of scope for drag-and-drop creativity, but if even dragging and dropping lies beyond your work threshold there's an automatic editing wizard called Movie Show Maker that will cut your clips to a predesigned template. There's a good choice of templates and the results aren't at all bad.

Advanced features include keyframe control – enabling the changing of effect parameters over time – advanced audio mixing and effects. Disc authoring features are well integrated, with a good set of menu templates and automatic/manual chapter point creation.

Movie Edit Pro 14 strikes a good balance between basic and advanced editing, but too often the advanced stuff gets in the way, making the workspace cluttered and a little intimidating for newcomers to video editing. And the advanced controls themselves, though not lacking in power, are difficult to understand and use; the keyframe controls, for example, look so tortuously complex it's difficult to know where to begin.

On the positive side, you get an awful lot for your money in an application that you won't outgrow any time soon.

Verdict

Pros Lots of effects; advanced editing controls

Cons Cluttered, busy workspace; gets complicated in places

Overall Lots of features, but the least easy to use of all

Features ★★★★★

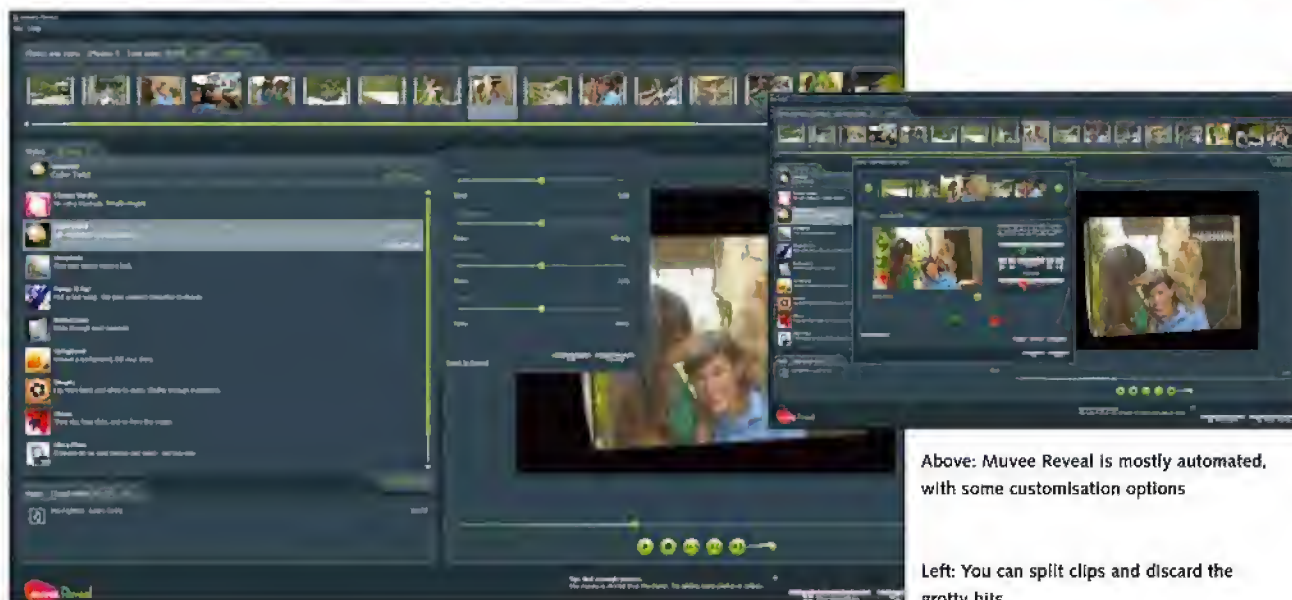
Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Muvey Reveal

Price \$79.95 (£53) Contact www.muvey.com



Above: Muvey Reveal is mostly automated, with some customisation options

Left: You can split clips and discard the grotty bits

Most of the applications in this group test have a feature that automatically produces a finished movie from your clips and other content, inserting transitions and effects, and adding a music backing track, all based on a themed template. That's what Muvey Reveal does. In fact, that's all it does – but it does it fantastically well.

Muvey Reveal is quite a mature application – previously called Muvey Auto Producer – and its maturity shows in the slick interface. When you first launch the program, big numbers guide you through the stages. There are three of them; 1 add your photos and video; 2 select a style; and 3 choose a music track. All that's left to do is press the Play button and preview what has been created.

You're never satisfied with a first attempt, though, and experimentation is possible in a number of ways. You can choose a different style: there are 10 to choose from, and you can customise them by clicking a Style settings button which opens a panel containing options for adjusting the pace, response to music, transitions and effects. Some of these are general and some, like the page flip-style for the scrapbook, are specific to individual style templates.

Changing the style itself is simply a matter of selecting a new option from the list. The style templates apply transitions and effects to the content in the order in which it appears on the storyboard. The templates are well designed and there's a good range – from Ultra Plain and Classic Vanilla, which do little more than edit the clips and photos together with simple cuts, to more aggressive styles such as Cube Twist, Pump it up and Hexplode, which adds 3D effects and cuts to the beat of the music backing track.

To begin with we were a little concerned that, beyond rearranging clips and photos, the scope for manual editing was limited. Then we spotted little arrows below the clip thumbnails, which expand a context menu with an option to automatically split long clips into shorter segments.

This menu also includes Magic Moments, a clip editor that is used to highlight the best bits of a clip and discard the dross. This editing window also allows you to preview and add captions to clips. The same menu below photos provides tools for enhancing, rotating, adding captions, editing the duration and previewing motion effects. There's also a Magic Spot feature that provides varying degrees of control over pan and zoom motion effects.

Title and credit sequences are added to the beginning and end of the movie, and these can be personalised. The Personalize panel includes other options, such as adjusting the audio mix, including style sound effects and recording a voiceover narration.

Muvey Reveal is quick, slick and seamless. Having selected a new style, changed the style settings or made some other alteration, pressing the Play button results in a short delay while the content is shaped to fit the new layout and the action begins.

When you're done, you can output your muvey to Muvey's schwup.com sharing site, to DVD, for handheld devices, including the iPod and PSP, or to any of the other supported formats, including HD.

It's hard to find things not to like about Muvey Reveal. It's quick, easy to use and produces great results. It would be good if it included a Youtube upload option. We were also a bit dismayed by the lack of an undo when we accidentally deleted a clip.

Verdict

Pros Incredibly easy to use; quick and stylish results

Cons No scope for 'real' video editing

Overall If you're more interested in the results than the process, this is for you

Features ★★★★★

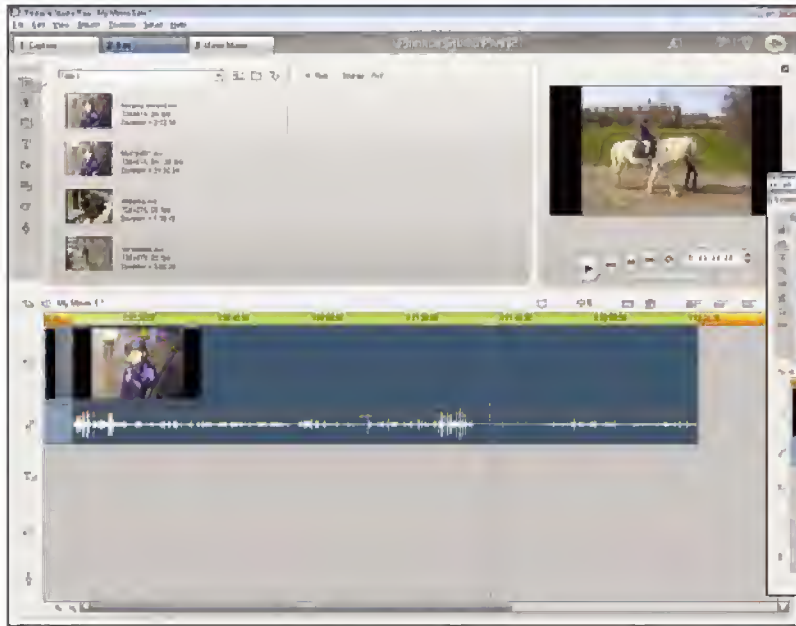
Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

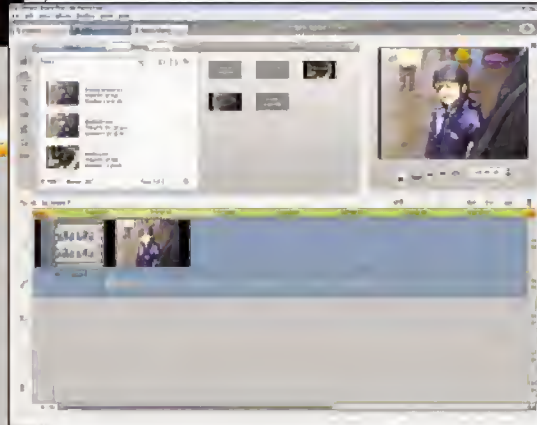
Pinnacle Studio Plus 12

Price £69.99 Contact www.pinnacle.sys.com



Left: The Studio Plus interface is steadfastly unfashionable, but extremely practical

Below: Montage themes provide animated sequences into which you drop your clips



Pinnacle Studio comes in three versions: Standard, Plus, and Ultimate. The Standard version doesn't provide video overlays, so you can't do things like picture-in-picture (PiP) effects. Studio Plus, the version reviewed here, adds the video overlays, chromakeying, some additional effects and better DVD authoring, while Ultimate includes two additional applications and a small green background cloth for producing chromakey overlays. The price difference between each version is £30 and even with the Ultimate edition there are some effects you need to pay extra for to unlock.

Studio is renowned for its ease of use. The interface is split over three tabs: Capture, Edit, and Make Movie. It's the middle one of these where most of the action takes place and the screen is split into three areas: a viewer; a storyboard/timeline; and a tabbed album area. This last is used to organise your clips and add titles, transitions, music and effects.

Two buttons on the storyboard/timeline provide further editing options for video and audio. The Video Toolbox is used to trim clips, create titling, produce Chromakey and PiP effects, and apply effect plug-ins.

The Video Toolbox will also scan your project to automatically produce chapters and menus for a DVD and, if you can't be doing with the fiddly business of editing your own movie, will automatically produce it for you. Unlike Premiere Elements, it doesn't provide a wide range of themes, but minor variations on two styles – music video and slideshow.

Studio has good audio-editing features. The Audio Toolbox provides easy-to-use tools for adding voice-over narration and music from CD or the Scorefitter music library, and adding plug-in audio effects. But the

highlight is the audio mixer. As well as a mixing desk for balancing sound across the various audio tracks, there's a visual mixer that you can use to position individual channels in stereo and other multi-channel audio tracks, including 5.1 surround sound. Using this feature, making an explosion travel from the front-right to rear-left speaker is a simple matter of dragging and dropping an icon.

The big new feature in Studio 12 is Montage themes. These are themed clips that use graphical elements in conjunction with layered clips to produce multi-track animated sequences. The themes are split into opening, segue and end segments, which you can combine to produce a sequence of any length. Montage themes are easy to use – you simply drop your clips onto drop zones to add them to an animated sequence – and the results look good.

If Pinnacle can improve on the editing and customisation potential, and find a way to extend Montage Themes so they can be used in DVD menus (the way they are in Apple's iDVD, where this idea originated), they could be on to something.

There's little else new in this version that would make it a compelling upgrade for existing Studio users. Pinnacle says it has addressed stability issues but, in our experience, Studio remains prone to performance problems and, if the forums are anything to go by, we're not alone.

Ease of use remains Studio's strongest selling point. If Pinnacle would only listen to its existing users and concentrate its efforts on addressing the performance issues rather than trying to sell premium content from the application menus, it would have an even better product and many more satisfied users.

Verdict

Pros Easy to use; good range of keyframeable effects; chromakeying

Cons Sluggish; prone to glitches and performance issues

Overall Excellent choice for those starting out, but can be frustrating

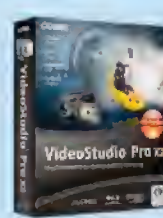
Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Video-editing software



MANUFACTURER

ADOBE

COREL

Product

Premiere Elements 7

Videostudio Pro X2

Price inc Vat

£74.75

£67

Telephone

0800 028 0148

0800 376 9271

URL

www.adobe.co.uk

www.corel.co.uk

CAPTURE, IMPORT AND EXPORT

DV capture (Firewire)

✓

✓

Analogue capture

✓

✓

Video import formats

ASF, AVI, AVCHD, SWF, DV, DVD, H.264, HDV, Mod and Tod (JVC Everio, import only), MPEG-1, MPEG-2, MPEG-4, Quicktime, Windows Media and 3GP

AVI, MPEG-1, MPEG-2, HDV, AVCHD, M2T, MPEG-4, H.264, Quicktime, Windows Media Format, DVR-MS, Mod (JVC Mod File Format), M2TS, Tod, BDMV, 3GP and 3GPP2

Scene detection

✓

✓

Video output formats

AVI, AVCHD, Blu-ray Disc DV, DVD, H.264, HDV, MPEG-1, MPEG-2, MPEG-4, Quicktime, Windows Media and 3GP

AVI, MPEG-1, MPEG-2, HDV, AVCHD, Mpeg-4, H.264, Quicktime, Real Media, Windows Media Format, BDMV, 3GPP, 3GPP2, FLV

DVD/Blu-ray authoring and burning

✓/✓

✓/✓

Auto chapter markers

✓

✓

VIDEO EDITING

Timeline mode/storyboard mode

✓/✓

✓/✓

Overlay/picture-in-picture

✓

✓

Max video tracks

99

2 (plus two title tracks)

Max audio tracks

99

2

Colour adjustment/slow/fast motion

✓/✓

✓/✓

Auto-editing wizard/still image slideshows

✓/✓

✓/✓

Chroma key/effect plug-ins

✓/✓

✓/✓

Custom effects/transitions

✓

✓

Keyframes/customisable workspace

✓/✓

✓/✓

TITLING & AUDIO

Titling editor

✓

✓

Text effects

✓

✓

Title animation

✓

✓

Audio mixing/effects

✓

✓

Timeline waveform display

✓

✓

Voice-over recording

✓

✓

5.1 mixing

x

✓

Minimum system requirements

(Unless otherwise indicated, minimum system requirements may be higher for HD editing)

1.8GHz processor with SSE2 support (3GHz for HDV or Blu-ray, dual-core for AVCHD, Windows XP SP2, Media Center, or Vista, 512MB (with XP) or 1GB (with Vista) Ram 4.5GB available hard disk space 1,024x768 16-bit DirectX 9 or 10 compatible display

Intel Pentium 4, AMD Athlon XP (equivalent) or higher, Windows XP SP2 Home Edition/Professional/Media Center, or Vista, 512MB Ram, 1GB available hard disk space, Windows-compatible soundcard, Windows-compatible DVD-Rom for installation

SCORES

Features

★★★★★

★★★★

Ease of use

★★★★

★★★★

Value for money

★★★★

★★★★

OVERALL

★★★★★

★★★★

**CYBERLINK**

Power Director 7 Ultra
£58.49
N/A
www.cyberlink.com



DV-AVI, Windows-AVI, DAT, MPEG-1, MPEG-2, DVR-MS, VOB, VRO, WMV, Mov, Mod, Tod, MP4, MTS, M2TS, JTS

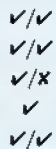


AVCHD, MPEG-1, MPEG-2, DV-AVI, DivX, MPEG-4 AVC, MPEG-4 SP, WMV, Real Video, Mov



9 (video, effects, PIP and titles)

3 (recorded with video, voice-over, music)



Pentium 4 2.2GHz or compatible, Windows XP SP2, 1,024x768 16-bit display, 256MB Ram 5GB available hard disk space

**MAGIX**

Movie Edit Pro 14 Plus
£59.99
N/A
www.magix.com



DV-AVI, MPEG-1, MPEG-2, Quicktime, Magix Video (.mxv) WMV, VOB, AVCHD, MPEG-4

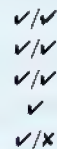


DV-AVI, MPEG-1, MPEG-2, Quicktime, Magix Video (.mxv) WMV, VOB, MPEG-4, Real Media



99 tracks in total

99 tracks in total



✗ (available with paid-for plug-in)

Pentium or Athlon 1.8GHz, Windows XP SP2 or Vista, (Pentium HT or Athlon 2.4GHz or 1.6GHz dual-core required for Vista), 1GB system memory, DirectX 9 or 10 compatible graphics card with 64MB VRam (128MB for Vista), 2GB available hard disk space, DVD-Rom drive

**MUVEE**

Reveal
\$79.95 (£53)
N/A
www.muvee.com



WMV, Quicktime, MPEG-4, H.264, MPEG-2, MPEG-1, DV-AVI, 3GPP, DVD Camcorder MPEG-2, AVCHD, HDV

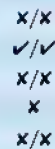


WMV, WMV-HD, Quicktime, MPEG-4, H.264, MPEG-2, MPEG-1, H.264, AVI

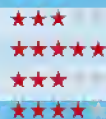


1

2



Intel Pentium 4 2GHz, 1GB Ram, video drivers with Open GL 1.4 support, Windows XP or Vista

**PINNACLE**

Studio Plus 12
£69.99
N/A
www.pinnaclesys.com



AVCHD, DV, HDV, AVI, MPEG-1, MPEG-2, DivX, MPEG-4, 3GP (MPEG-4), WMV, Non-encrypted DVD titles

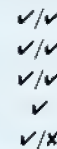


Video CD (VCD) or S-VCD, AVCHD, Blu-ray BD, HD-DVD, DVD disc, Apple iPod and Sony PSP compatible (MPEG-4) formats, DV, HDV, AVI, DivX, Real Video 8, WMV, MPEG-1, MPEG-2, MPEG-4, Flash and 3GP

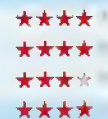


3 (video, overlay, titles)

4 (recorded with video, voice-over/sound effects, music)



Intel Pentium or AMD Athlon 1.4MHz or higher, Windows XP, 512MB Ram (1GB required for HD), DirectX 9 or higher compatible graphics card with 32MB VRam (128MB required for 720p HD, 256MB required for 1080i HD), DirectX 9 or higher compatible soundcard, 1GB available hard disk space, DVD-Rom drive



Advanced editing

If you've outgrown a consumer video-editing application, or you're planning a professional project, what are the advanced editing options available to you? What do they offer that you can't get from the programs reviewed in this group test? And what, if any, are the drawbacks of using professional video-editing software?

As you'd expect, professional editing software supports professional video formats and media such as DVCPRO, XDCAM and P2 cards, as well as AVCHD and other tapeless formats. Likewise, most export formats are supported, with batch queuing so you can simultaneously output a project for delivery across multiple platforms.

Pro editing tools are more sophisticated, geared to getting the job done more quickly, and they produce results far superior to those of budget applications. Chromakeying, for example, will include tools that enable you to pull a clean key with no light spill or fringing. Compositing tools enabling multi-layering of video and graphical elements are much more versatile, allowing for complex masking and keyframed motion control effects. They also work with output from specialised compositing applications such as Adobe After Effects.

Colour-correction controls and filters are geared to producing broadcast standard output, so you'll find waveform monitor and vectorscope instruments for assessing video luminance and chrominance levels and maintaining them within acceptable limits for broadcast. You'll also find tools for colour-matching footage shot on different cameras.



Price is the biggest drawback to using pro tools

A great deal of what differentiates a pro from a budget application is productivity-related. Pro applications make routine tasks – three-point-editing, trimming, timeline-scrubbing – so straightforward you

hardly have to think about them at all.

They also provide tools designed for organising the vast quantities of footage generated by Professional projects.

The most obvious drawback to going pro is the price – 10 times or more what you'd pay for a consumer video-editing application. You also need to put in the hours learning how the application works.

Adobe Premiere Pro CS4

www.adobe.com; £688.85 (£599 ex Vat)

Sony Vegas Pro 8

www.sonycreativesoftware.com/vegaspro; £478.34 (£415.95 ex Vat)

Avid Media Composer

www.avid.co.uk; £1,783 (£1,550.43 ex Vat)

Final Cut Studio 2

www.apple.com/uk/finalcutstudio/finalcutpro; £831 (£722.61 ex Vat)

Editor's Choice

Editor's Choice Adobe Premiere Elements 7
Recommended Muvee Reveal



Adobe Premiere Elements 7



Muvee Reveal

The free market is alive and well in the world of video-editing software. Competition is such that software developers are quick to incorporate features introduced by their rivals and adopt new formats and technologies, such as AVCHD and Blu-ray.

So, if you take a look at the table of features, you'll find that things such as automatic scene detection, auto editing to a style template, chromakey compositing, and still image slideshows are offered by just about everybody.

Features are important, but when everyone offers broadly the same thing, it's how those features are implemented that count. How easy is it to superimpose someone on a different video backdrop, add a voice-over track, or remove wind noise from audio recorded with a built-in camcorder mic? And when you've done it, how good are the results?

The application that scores top in both those categories – ease of use and quality of results – and therefore wins our Editor's Choice award, is Adobe Premiere Elements 7. Earlier versions of

Premiere Elements have come under fire for lacking the accessibility for which the company is well known, but this time Adobe has got the balance between ease of use and advanced editing features spot-on.

Two must-have features – chromakey and auto editing – have been added in this version and, though they've arrived late in the day, outshine equivalent features in the other applications reviewed here.

Not content to merely play catch-up, in Smart Tagging, Adobe has introduced an innovative new feature that will appeal to beginners and more experienced editors alike.

Although it lacks nearly all the features you would expect to find in a video-editing application, Muvee Reveal gets a Recommended award. Why? Mainly because it's just such a joy to use. Reveal has taken a single feature – automatic editing to a style template – and created an entire application based on it.

It's so simple anyone can produce great-looking movies in just a few minutes. The only sour note is the US dollar price which, due to recent exchange rates, now looks a little steep for a (very accomplished) one-trick pony. **PCW**



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**ON TEST**

- 102** Buffalo BR-816 FBS
Media Station
LG GGWH20L
- 103** Lite-On DH-4B1S
Sony NEC Optiarc BWU-300S
- 104** Table of features
- 107** Three top Blu-ray tips
Editor's Choice

Thanks to TDK for supplying the Blu-ray media used in our testing

'If you're primarily interested in backup and data storage, then just about any up-to-date PC will be able to work well with a Blu-ray drive'

Blu revue

Paul Monckton puts some of the latest Blu-ray drives to the test

Blu-ray recordable drives, once out of the reach of all but the richest early adopters, are continuing to come down in price. Although they'll need to come down further still before they're as widely accepted as DVDs, we're now seeing an increasing number of PCs equipped with drives capable of reading the high-capacity discs, and with Blu-ray writers now available for well under £200, those of us who wish to create and store HD content of our own can now afford to do so.

Here we look at four Blu-ray writers, with different prices and performance, to find out

which is the best type for you. All of them ship with Cyberlink's BD Solution software, which provides all you need to create, edit and play back HD content – either on your PC or on a standalone Blu-ray player. Backup software is also included in the package.

If you're primarily interested in backup and data storage, then just about any up-to-date PC will be able to work well with a Blu-ray drive. However, if you want to be able to play back commercial Blu-ray titles you'll need to make sure all the relevant system components support the HDCP content.

Buffalo BR-816 FBS Media Station

Price £229.99 Contact Buffalo www.buffalotech.com



One of the first vendors to offer eight-speed Blu-ray writing, Buffalo has used a Panasonic SW-5584 drive mechanism to create internal and external versions of its latest high-speed drive.

Unlike Buffalo's previous six-speed Blu-ray writer, the new model doesn't support playback from HD DVD media. So if you have an archive of old discs or movies, you'll need to hang on to your original drive if you're considering an upgrade.

The drive mechanism used in the previous version of the product is an LG GGW-H20N, which is an

identical drive to the unit LG has submitted for this review, save for the lack of Lightscribe technology.

Buffalo has therefore traded support for the defunct HD DVD format for increased performance on Blu-ray. When writing to compatible media, the BR-816FBS is capable of burning a 25GB disc in about 17 minutes – a saving of around seven minutes per disk over the four-speed drive from Lite-on.

It's debatable whether an eight-speed Blu-ray drive is currently a good-value purchase. At the time of writing, compatible Blu-ray discs were incredibly scarce, so you're unlikely to take full advantage of the drive for some time. Furthermore, both eight-speed drives from Buffalo and Optiarc cost considerably more to buy than marginally slower six-speed drives.

If you simply must have the fastest possible speeds, then this drive, along with the Optiarc product, won't disappoint, whether you're creating Blu-ray discs, burning standard DVDs or even CDs.

It's difficult to choose between the two eight-speed drives available here: with pretty much identical performance, compatibility and warranty terms it's going to come down to price – and at the moment the Buffalo drive can be bought for less. Buffalo's drive is also available in an external USB2 version, which is great for backing up multiple PCs.

LG GGW-H20L

Price £141.90 Contact LG <http://uk.lge.com>



The GGW-H20L is unique in this group test in that it supports playback of HD DVD media, and anyone with an existing library of discs will find the feature invaluable. With its maximum Blu-ray writing speed of six-speed, this isn't the fastest drive you can buy, and six-speed discs are hard to obtain. However, the GGW-H20L drive can burn some four-speed media at the full six-speed, resulting in minimum burn times of 22 minutes for a 25GB disc. For 50GB discs, the maximum four-speed will see your dual-layer disc complete in 45 minutes.

You may have noticed that 50GB in 45 minutes is pretty much the same overall speed as 25GB in 22 minutes. The reason for this is that the CAV (Constant Angular Velocity) write strategy used to burn single-layer discs starts writing at around 2.5-speed, only reaching the full six-speed towards the end of the burn. By contrast, the CLV (Constant Linear Velocity) mode keeps the burn rate at a constant four-speed throughout.

When it comes to DVD performance, the GGW-H20L can burn single-layer media at a respectable 16-speed. However, it's limited to only four-speed when using dual-layer discs. This means it's only half the speed of the competition when burning 8.5GB DVD media.

With support for less popular media such as DVD-Ram and even the rarely used HD-Burn format, the GGW-H20L is compatible with more discs than any other model in this group test. It's also the only model to support Lightscribe disc-labelling.

To get you started, LG has included a 25GB rewriteable Blu-ray disc, along with a set of serial ATA power and data cables. The drive's attractive front bezel is finished in black and silver, with subtle design touches that give it a much classier look than a run-of-the-mill optical drive. With street prices currently under £150, this drive offers exceptional value for money and is only a little slower than the latest eight-speed models.



Verdict

Pros Eight-speed top writing speed on Blu-ray; excellent performance on all media

Cons Price; no HD DVD playback

Overall This is a top performer, although it needs the very latest media to achieve these speeds on Blu-ray. HD DVD support, available in the previous model, has now been removed. Rather pricey

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★



Verdict

Pros Good Blu-ray performance; HD DVD playback; excellent media compatibility; amazing value for money; Lightscribe support; attractive design

Cons Poor dual/double-layer DVD performance; slower than an eight-speed drive

Overall Able to burn just about any disc, read HD DVD and Lightscribe enabled, the GGW-H20L is a good performer and an excellent purchase considering its low price

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Lite-On DH-4B1S

Price £166.37 Contact Lite-On www.liteonit.eu



Lite-On's DH-4B1S is a much better buy than it might seem at first glance: unfortunately for Lite-On, the most obvious stand-out feature of the DH-4B1S is the fact that it's rated at four-speed when burning Blu-ray discs – not an impressive specification when placed next to drives offering six-speed and even eight-speed performance.

However, these speed ratings aren't as simplistic as they might seem. An eight-speed drive is not necessarily twice as fast as a four-speed unit – a point Lite-On has been battling to make clear in its promotional material.

The reason for this is that where some drives start off slowly, only building up to their maximum speeds towards the end of the burn, the 4B1S maintains its full four-speed performance across nearly all the disc surface. This means the Lite-On drive can complete a full single-layer disc in 24 minutes, only around three minutes longer than the six-speed GGW-H20L.

Of course, this still can't touch the top performance of the eight-speed drives from Buffalo or Sony in full flight, but to get the most out of these drives you'll need to find BD-R media rated at six-speed at least, and those are still relatively difficult to obtain. When it comes to burning standard single-layer DVDs, the DH-4B1S is a little slower than the competition, running at 12-speed rather than the more usual 16-speed, but when it comes to 8.5GB DVDs, its eight-speed is double that attained by the LG.

Like all the Blu-ray drives here, the Lite-On drive is shipped with a copy of Cyberlink's BD Solution suite of multimedia software. Also in the box is a blank 25GB rewritable BD-RE Blu-ray disc.

Available for less than £170 online, the DH-4B1S is good value for money and performs much better than its spec might suggest. However, LG's ultra-compatible GGW-H20L can be found for even less, is faster overall and can read HD DVD discs.

Verdict

Pros Faster than you might think; low price

Cons Slower than the competition; also slower at DVD burning

Overall Although rated at four-speed, the DH-4B1S still turns in respectable performance on all easily available Blu-ray discs. It's also available at a very low price – though not quite as low as the faster LG GGW-H20L

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Sony NEC Optiarc BWU-300S

Price £254 Contact Sony www.sony-optiarc.eu



The Optiarc BWU-300S, along with Buffalo's BR-816FBS, offers what is currently the fastest Blu-ray burning solution available. With support for burn speeds at up to eight-speed you'll be writing, gigabyte for gigabyte, at around the same speed as a fast DVD burner and completing a 25GB BD-Rom in around 17 minutes.

Burning BD-Roms at eight-speed brings one major problem: Blu-ray discs rated at eight-speed don't yet exist. However, six-speed discs almost do – and if you can find one, the BWU-300S will push it up to eight-

speed in much the same way LG's GGW-H20L is able to get six-speed performance out of four-speed media.

The BWU-300S makes speedy work of all forms of supported media: single-layer DVDs burn at 16-speed, while dual-layer DVDs can be written at eight-speed. Even a CD can be completed at a class-leading 48-speed.

The rather sleekly styled bezel of the BWU-300S, with its big blue Blu-ray icon, lends it a rather more expensive appearance than the competition – an appropriate look, because it does indeed cost considerably more. However, its look won't be suited to certain system cases or drive enclosures, so an interchangeable cheap-looking tray cover has also been provided for just such uses.

Also supplied is a full set of cables and screws, so you won't need to go searching for that spare serial ATA cable that came with your motherboard when you come to install your new drive. Unfortunately, it doesn't ship with a blank disc, so you'll have to add the cost of one of those to the already rather high price of this drive.

The BWU-300S is an excellent drive delivering superb performance, but we'll have to wait for prices to come down a little before we can recommend it over less expensive options, even if they don't support the eight-speed burning of the Optiarc unit.

Verdict

Pros Top-notch performance across the board; supplied with all required cabling and screws

Cons Price; no HD DVD support

Overall Currently priced too high to compete, this super-fast drive will become a true contender once prices are discounted and higher speed Blu-ray media are available

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Blu-ray drives

MANUFACTURER	BUFFALO	LG	LITE-ON	SONY NEC
Product	BR-816 FBS Media Station	GGW-H20L	DH-4B1S	Optiarc BWU-300S
Price	£229.99	£141.90 (Ebuyer)	£166.37 (Amazon)	£254
Warranty	Two years	Two years	One year	Two years
Drive model	Matshita BD-MLT SW-5584	HL-DT-ST BD-RE GGW-H20L	Atapi BD B DH4B1S	Sony BDRW BWU-300S
Type	Blu-ray Rewriter DL	HD DVD-Rom	Blu-ray Rewriter DL	Blu-ray Rewriter DL
Interface	Sata	Sata	Sata	Sata
Tested firmware version	1	YL03	7P5A	1.0a
Buffer size	8MB	4MB	2MB	8MB
Read CD-R	48x	40x	40x	48x
Read CD-RW	32x	40x	40x	✓
Read DVD-Rom (SL/DL)	16x/12x	16x/8x	12x/8x	16x/12x
Read DVD-Ram	5x	5x	No	5x
Read DVD-R	16x	12x	12x	16x
Read DVD-RW	8x	10x	12x	8x
Read DVD-R DL	8x	8x	8x	8x
Read DVD+R	16x	12x	12x	16x
Read DVD+RW	8x	10x	12x	8x
Read DVD+R DL	8x	8x	8x	8x
Read BD-Rom	8x	6x/4.8x	4x	8x
Read BD-R	8x/8x	6x/4.8x	2x/2x	8x/8x
Read BD-RE	2x/2x	2x/2x	2x/2x	2x/2x
Read HD DVD-Rom (SL/DL)	✗	3x CAV/3x CAV	✗	✗
Read HD-Burn	✗	✓	✗	✗
Read Digital Audio	✓	✓	✓	✓
Read CD+G	✗	✗	✓	✗
Read Video CD	✓	✓	✓	✓
Write CD-R	48x Z-CLV	40x PCAV	40x CAV	48x Z-CLV
Write CD-RW	24x Z-CLV	24x Z-CLV	24x Z-CLV	24x Z-CLV
Write DVD-R	16x CAV	16x PCAV	12x P-CAV	16x Z-CLV
Write DVD-RW	6x CLV	6x CLV	6x CLV	6x CLV
Write DVD-R DL	8x Z-CLV	4x CLV	8x Z-CLV	8x CLV
Write DVD+R	16x CAV	16x PCAV	12x P-CAV	16x Z-CLV
Write DVD+RW	8x Z-CLV	8x ZCLV	8x Z-CLV	8x Z-CLV
Write DVD+R DL	8x Z-CLV	4x CLV	8x Z-CLV	8x CLV
Write DVD-Ram	✓	✓	✗	✓
Write BD-R (SL/DL)	8x P-CAV/8x P-CAV	6x CAV/4x CLV	4x Z-CLV/2x CLV	8x P-CAV/8x P-CAV
Write BD-RE (SL/DL)	2x CLV/2x CLV	2x CLV/2x CLV	2x CLV/2x CLV	2x CLV/2x CLV
Buffer Underrun Protection	✓	✓	✓	✓
Lightscribe	✗	✓	✗	✗
Supported write modes	Packet, TAQ, DAO, SAO, Raw SAO	Packet, TAQ, DAO, SAO, Raw SAO, Raw DAO, Raw SAO 16, Raw SAO 96, Raw DAO 16, Raw DAO 96	Packet, TAQ, DAO, SAO, Raw SAO, Raw DAO, Raw SAO 16, Raw SAO 96, Raw DAO 16, Raw DAO 96	Packet, TAQ, DAO, SAO, Raw SAO
Supplied software	Drive Navigator, Cyberlink Software Suite (Cyberlink Power Director 6, Cyberlink Power Producer 4, Cyberlink Power DVD 7 BD edition, Cyberlink Power 2 Go 5, Cyberlink Power Backup 2, Cyberlink Instant Burn 5, Cyberlink Mediashow 3)	Cyberlink Power Producer BD, Cyberlink Power Director, Cyberlink Power 2 Go, Cyberlink Instant Burn, Cyberlink Power Backup, Cyberlink Power DVD	Cyberlink Power Producer BD, Cyberlink Power Director, Cyberlink Power 2 Go, Cyberlink Instant Burn, Cyberlink Power Backup, Cyberlink Power DVD	Cyberlink Power Producer BD, Cyberlink Power Director, Cyberlink Power 2 Go, Cyberlink Instant Burn, Cyberlink Power Backup, Cyberlink Power DVD
Accessories	None	BD-RE 25GB disc	BD-RE 25GB disc	Screws, Manual, Quick Start guide, Sata cable, Sata power adapter, alternative bezel
Dimensions (wxdxh)	146x190x42mm	146x185x42mm	146x178x42mm	146x178x42mm
SCORES				
Performance	★★★★★	★★★★★	★★★	★★★★★
Features	★★★★★	★★★★★	★★★	★★★★★
Value for money	★★★	★★★★★	★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★	★★★★★

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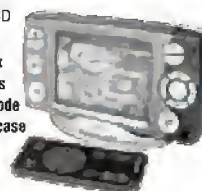
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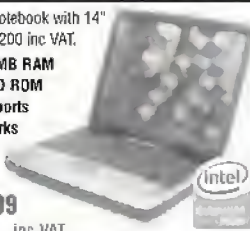
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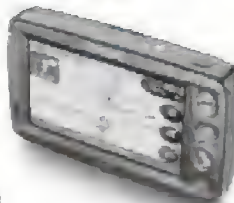
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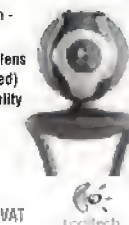
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Name(s) of account holder(s)

Branch Sort Code

Account Number

Signature(s) Date



Originator's Identification number

9 4 2 5 7 9

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Three top Blu-ray tips

Make sure your system can play back Blu-ray discs

If you want to rent or buy Blu-ray movies on your new drive, you'll need to make sure the rest of your PC is up to the job. Unlike DVDs, Blu-ray movies require that any part of your PC that processes them complies with the High-bandwidth Digital Content Protection (HDCP) system. This includes not only your Blu-ray drive, but also any playback software, your graphics card drivers and your monitor. Suitable playback software is usually provided, but make sure you have the latest graphics drivers installed and that your monitor supports HDCP.

For an automated system checkup, you can download Cyberlink's BD Advisor utility from www.cyberlink.com.

Buy the correct type of disc

You don't need HDCP support if you just want to use your drive to create your own content or back up your own data, but to get the most from your hardware you'll need to buy the right kind of disc.

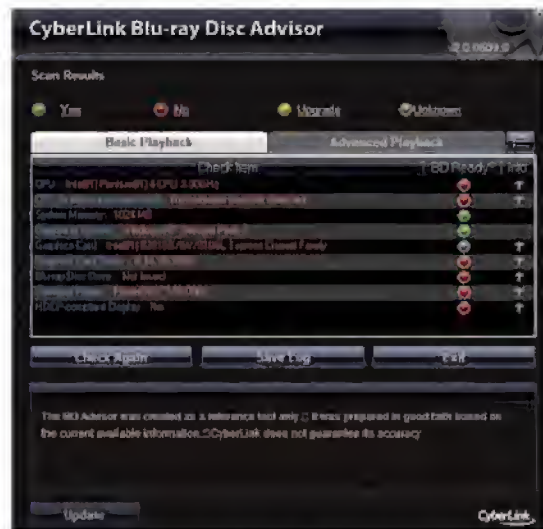
Write once, BD-R, and rewriteable, BD-RE, discs are currently available in both 25GB and 50GB versions. All the drives tested here support both versions in both capacities, although write-once media is considerably faster than rewritables.

The speed rating is also important. Two-speed media are prevalent and four-speed discs are relatively easy to find online. However six-speed discs are new and currently difficult to get hold of. Luckily for owners of six-speed drives such as LG's GGW-H20L, you'll be able to write at six-speed on most four-speed discs. However, if you plump for an eight-speed model you'll have to seek out those elusive six-speed discs to achieve top performance.

Don't bother looking for any eight-speed discs yet – you won't find any.

Upgrade Vista to Service Pack 2

Although still in Beta at the time of writing, the latest service pack update to Vista comes with built-in support for writing Blu-ray data discs, so you can abandon your burning software altogether.



Download Cyberlink's BD Advisor utility for automated checkups

Editor's Choice

Editor's Choice LG GGW-H20L

Recommended Buffalo BR-816 FBS Media Station



LG GGW-H20L

Take a little care when choosing your Blu-ray writer; going straight for the package displaying the biggest numbers won't necessarily get you the best deal. The difference between four-speed, six-speed and eight-speed is more than simple arithmetic.

Even the slowest performer overall, Lite-On's DH-41BS, is capable of delivering speedy results with its four-speed CLV writing strategy. It can even outperform a six-speed drive under certain



Buffalo BR-816 FBS Media Station

circumstances. Four-speed Blu-ray media is widely available and the drive is available at a temptingly low price. Unfortunately, for Lite-On you can get hold of a faster drive for even less.

Those of us who demand the fastest speed will be willing to spend a little extra to get it. Both the eight-speed drives tested here – the Buffalo BR-816FBS and Sony NEC Optiarc BWU-300S – use the latest and greatest technology to tempt you with the possibility of impressively fast burn times.

However, to take advantage of this performance you'll need to use Blu-ray discs certified for at least six-speed. Although these are now available to buy, they're very scarce, so you're unlikely to be making use of that extra speed for some time to come. You'll also have to pay a considerable premium to buy yourself this future potential. Both these drives also offer superior performance on DVD and CD media.

Prices of the Buffalo drive are starting to come down, so for those of you eager to get your hands on the fastest possible speeds, the BR-816FBS wins our Recommended award.

Currently the best balance of price, performance and features is offered by our Editor's Choice, the LG GGW-H20L. This drive can use widely available four-speed Blu-ray discs to write at up to six-speed, achieving a level of performance that's not far off the eight-speed drives. It's also capable of playing back your old HD DVD discs.

Performance is a little slow on some disc types, such as 8.5GB DVD media, but even so the GGW-H20L is currently a winner on overall flexibility and performance, especially when you take into account that this drive comes at the lowest-price of the whole group. **PCW**

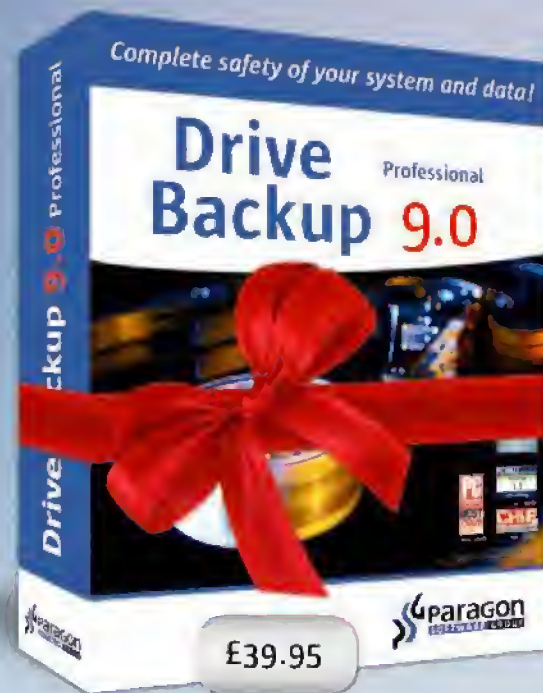
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www.paragon-software.com/uk

Drive Backup 9.0 Professional

Protect your hardware, undo software malfunctions or crashes, and safeguard your data with Paragon Drive Backup 9.0 Professional Edition!

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*Paragon Software Group
wishes you a Merry Christmas!*



THERE'S LIFE AFTER WINDOWS

With Windows pre-installed onto every PC and server you buy, it's easy to think there are no real alternatives; however, that's not the case. In this month's Business Section we look at how you can save money and get other benefits by switching to Linux, and offer tips on how to go about evaluating and deploying the open-source platform.

Coincidentally, we've also got a review of the latest mail server from Kerio, which is available for Linux as well as Windows. Plus, we take a look at a new, more affordable, version of Double-Take's popular server mirroring and failover solution – Livewire. We have hardware, too, and look at a wireless all-in-one inkjet from Lexmark, a big network storage appliance with flexible Raid protection from Lacie and a big projector from Infocus designed to light up large venues.

CONTENTS

FEATURE

110 Linux, ready for business

REVIEWS

112 Lexmark X7675

113 Lacie 5big Network

114 Kerio Mail Server 6.6

115 Infocus IN5102

116 Double-Take Livewire



OUR SCORING

Excellent ★★★★★ Very good ★★★★☆ Good ★★★☆☆ Below average ★★☆☆☆ Poor ★☆☆☆☆

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.



Editor's Choice
Business



Recommended
Business



Great Value
Business

The business awards are used for products that are more suited to home offices or small businesses.

BUSINESS



'The plain design of the 5big network may not be to everyone's taste but it is unobtrusive and very quiet in operation'

Read the review on page 113

Linux, ready for business



Alan Stevens explores the best way to move your business to the open-source operating system

Let's face it, if you're a small business, the chances are you're running Windows on all your desktop and notebook PCs, not to mention any servers you might have. Although you've seen and read about alternatives such as Linux, you're unlikely to have had time to research the subject in any depth, or understand what's really involved. So, the idea behind this month's business feature is to give you an overview of the benefits of switching to an open-source platform, plus a few tips on taking advantage of what Linux has to offer.

Linux pros and cons

Cost reduction is the biggest benefit of switching to Linux, although it may not be immediately obvious, partly because Windows tends to come pre-installed on all new PCs, making it easy to miss the fact that

Virtualisation makes it easy to evaluate Linux without having to invest in new hardware

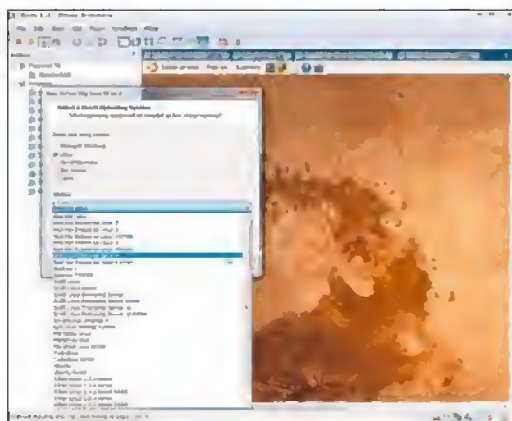
you have to pay for each copy – and it's not cheap. Added to which, if you want to run a Windows server you not only have to buy a licence for the server software but for every PC or user you want to connect.

Licences are also required to use Linux, however, with most implementations (commonly referred to as distros) they don't

cost anything. This means you can take one copy of the software and install it on as many PCs or servers as you want, while servers can be configured for multiple users.

You may have to part with some money for this privilege. A couple of the big-name vendors – for example Red Hat and Novell – charge to provide support and software updates, but even then it's not a huge amount and, for the most part, the software itself doesn't cost anything.

Another advantage is the bundling of extra application software with most of the distros. Things such as web, email and database servers, for example, will be included as standard, along with a variety of desktop applications such as the Open Office suite. Most of these are free to license and use, again leading to big savings compared with sticking with Windows where



The Ubuntu experience

For small businesses trying Linux for the first time, Ubuntu is a good choice. It's free to download for both server and desktop use,

and a Live CD implementation of the desktop version makes it easy to evaluate. The latest desktop distro can even be

loaded onto a USB key and booted from that, if required.

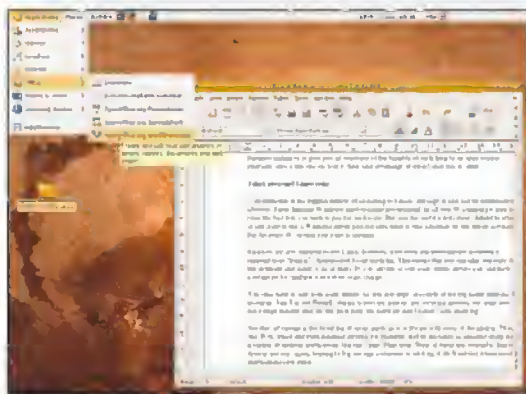
Integration and compatibility with Windows networking come as standard with Ubuntu. Fire up the desktop distro, for example, and you can join an Active Directory domain and access file shares straight away. You can even open and work on Microsoft Office documents using the

Ubuntu is one of the most popular Linux distros around and a good choice for the small business just starting out down the Linux route

latest version of the Open Office productivity suite, also included in the default install.

As far as the desktop interface is concerned, there's a choice of either Gnome or KDE software, with 3D effects just like on Vista. Firefox is the default browser, with Evolution for email and calendaring installed and ready to run from the off.

On the server front, Samba 3.0 is provided to support file and print sharing, along with an Apache HTTP server that can be configured to host a wide range of web applications using PHP, Perl, Java and a variety of other languages. A number of backend databases can also be hosted by Ubuntu, including MySQL, DB2 and Oracle Database Express, with software to run your own email server also bundled into the distro.



most applications cost extra.

Security is another area where benefits can be gained, with far fewer Linux viruses for example, compared with Windows. Indeed, open-source software as a whole is seen as far less susceptible to threats, and accepted wisdom would have us believe that the platform is far more stable.

There are drawbacks, of course. Different skills, for example, are required to install, use and maintain a Linux system compared with Windows. The graphical interfaces aren't that dissimilar, but underneath Linux is a very different beast, especially when it comes to configuration, maintenance and support. And of course, applications written for Windows aren't always available for the Linux platform. A lot of developers now offer Linux support, and where they don't you can usually find something similar available, but not always with the functionality required to run on every version of Linux.

Getting started

You can read as much as you like, but the only way to find out what Linux is all about is to try it for yourself. It's not difficult and the only significant investment will be time.

There are several implementations to choose from, most of which can be downloaded and used for little or no cost (see box – Choose your distro). Many are also available as so-called Live CD implementations, enabling you to run Linux from a bootable CD rather than having to install to hard disk. Indeed, the software on the PC is left entirely untouched, making a Live CD a risk-free way of sampling Linux.

Unfortunately, Linux run from a Live CD will be slower than normal, and you won't be able to retain your data between sessions, so at some point a full install will be needed. The good news, however, is that you don't need highly specified hardware, even for a shared network server. Hardware support is much the same as for Windows, such that if it can run the Microsoft OS it ought to be able to run Linux and, usually, deliver better performance.

Virtualisation can be a big help, especially when evaluating Linux for the first time. Rather than dedicating hardware to the project, a free virtualisation tool such as VMware Server (www.vmware.com) or Citrix Xen Server (www.citrix.com) can be used to host virtual machines running the more popular distros. If you don't get on with it, a virtual machine can simply be binned. On the other hand, if it's a runner, you can either port the



A Linux system running Samba can be used to share files and printers on a Windows network

VM to a physical environment or carry on running the Linux OS virtually. Another benefit is the ability to take snapshots of virtual machines or simply copy the virtual disks involved rather than have to make backup provisions for your Linux systems.

Having played with Linux for a while, and assuming you're happy with it, you'll want to put it to work. The best approach here is to introduce Linux systems gradually, starting with servers, as that way you'll get the biggest benefits for the least disruption.

Most companies, for example, start out using Linux for file sharing using the Samba application bundled with most of the distros. This enables a Linux server to support the same (SMB/CIFS) file-sharing protocols as used by Windows PCs and is often configured and ready to use right from the off. If it isn't, it's usually fairly straightforward, with no changes required at the user end. Indeed, once up and running users won't even know they're storing their files on anything other than a Windows server.

Next you might want to think about hosting an intranet or public web server, typically by running the Apache software included with the Linux OS. Most distros come with bundled email, database and other server applications which can, similarly, be integrated into your network setup.

It makes sense to start this way, introducing Linux-based servers rather than desktops. Switching desktop users, in comparison, is likely to be much more problematic, calling for a lot more planning and end-user training to get everyone used to the new environment. Still, it can be done and the benefits are certainly there, so why not give it a try? **PCW**

Choose your distro

Don't let the bewildering array of Linux distros put you off. If it's a serious business platform you want, the choices are a lot more limited. Here are our recommendations:

Red Hat Enterprise Linux

www.redhat.com

RHEL is one of the most comprehensive distros around, with server and desktop implementations aimed at businesses. However, a support and maintenance subscription is required, so it may not be the best choice if you're not sure that Linux is for you. If not, consider Fedora Core (<http://fedora.project.org>), a community-developed distro sponsored by Red Hat, or CentOS (www.centos.org), a free compatible rebuild of RHEL.

Novell's Suse Linux Enterprise

www.novell.com/linux

Similarly aimed at business buyers with both server and desktop implementations, the Suse distros can be downloaded for free, but a subscription is required for updates and support. The community-developed Opensuse (www.opensuse.org) is worth considering as an alternative as it's free (a version with installation support is available), with similar functionality.

Ubuntu

www.ubuntu.com

Ubuntu is one of the most popular free distros. Based on Debian Linux, Ubuntu is available for both server and desktop deployment. The Ubuntu distro is community-developed, with optional commercial support from Canonical.

Mandriva Linux One

www.mandriva.org

A popular desktop Linux distro,

available in Live CD format and on a bootable USB key. Best evaluated for desktop deployment. Enterprise server and desktop products are also available.



You can boot from a Live CD with Mandriva and try Linux without having to install anything on the PC hard disk

MULTIFUNCTION PRINTER

Lexmark X7675

Do it all with this bargain MFP for wired and wireless networks



The built-in Wifi of the smart-looking Lexmark X7675 lets users print, copy, scan and fax wirelessly

The X7675 is a smart-looking all-in-one printer from Lexmark that not only produces high-quality colour prints, but scans and copies original documents and acts as a colour fax machine.

Designed for sharing, the X7675 offers wireless and wired networking as standard. It also comes with a duplexer for double-sided printing and a bundle of useful software, including tools that can remotely scan over a network and convert scanned documents to readable text.

A compact but very square device, the X7675 is effectively a colour inkjet printer with a flatbed scanner on top. Paper is fed in at the back – up to 100 sheets at a time – and the printed pages are ejected from the front. Just above the output path is an angled control console with a colour display.

Its buttons are all big and well labelled, which helped us to work our way through most common operations without having to refer to the comprehensive manual that's also in the box. Copying was a doddle, with facilities to produce up to 99 copies at a time and reduce and enlarge along the way.

A comprehensive set of memory card slots is another standard feature, and built-in software lets you browse card contents and print photos directly without using a PC. There's a USB port on the front but it can only be used with Pictbridge-enabled Flash drives and digital cameras.

Around the back is a USB2 interface for direct PC attachment, telephone jacks for the fax modem, a Gigabit Ethernet port and the antenna for the Wifi print server. These were all very easy to set up although we did have to connect via one of the other interfaces first to configure the WPA

security settings we needed to use our Wifi router.

Two cartridges are required: one black, the other colour. So-called high-yield cartridges are included, but the black gives no more than 500 pages while the colour cartridge handles just 350. We found replacements selling for between £28 and £31 ex Vat, which translates to around 5-6p per page on average.

Maximum print speed is up to 32 pages per minute (ppm) for monochrome and 27ppm for colour. However, those figures are for draft printing, and most of the documents we tested took a lot longer. Indeed, when we selected the best possible quality it took around a minute to print a page of text. Photographs likewise took a long time to print with the special colour cartridges designed for doing a lot of photographic work. Most day-to-day documents printed out at a speed of around 12-15ppm.

Print quality is good. We could still tell that the documents had been produced by an inkjet, but the results are impressive nonetheless and more than adequate for most business purposes. Duplexing is turned on by default, with the printer pausing to let the first side of the page dry before orienting the other to minimise smudging.

We also liked the bundled software that could scan documents to network PCs, scan to email, convert captured documents to editable text, send faxes and so on. The only issue was the need to install the utilities on each user PC: they can't be operated directly from the printer control panel.

A very robust and businesslike device, the X7675 comes with a five-year warranty and at the time of writing its price had been reduced considerably, making it a real small-business bargain.

Alan Stevens

Verdict

Pros Wired and Wifi networking; duplexer; easy to use; comprehensive bundle of software tools; very affordable

Cons Not always as fast as claimed; USB port can't handle ordinary Flash sticks

Overall A good solution for the small business looking for a good-quality multifunction printer at a bargain price

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £149.99 (£130.43 ex Vat)

Contact Lexmark 0870 444 0044
www.lexmark.co.uk

Specifications Up to 32ppm (monochrome) and 27ppm (colour) inkjet • 4,800x2,400dpi • 100-sheet A4 feeder • 48-bit colour flatbed scanner • 25-page automatic document feeder • Integrated fax modem • Direct printing from memory card • USB2, Gigabit Ethernet and 802.11b/g Wifi interfaces • 5,000 pages/month duty cycle

NETWORK-ATTACHED STORAGE

Lacie 5big Network

Solid and straightforward five-disk storage device



The brushed-aluminium casing holds a five-disk array that can deliver up to 7.5TB of shared network storage

With its sleek, brushed-aluminium case and large blue 'eye', the Lacie 5big Network looks like a larger version of the 2big Network storage device we reviewed in April 2008. And effectively that's what the 5big Network is. This newly released member of the Lacie family offers even greater storage capacity, together with advanced Raid protection and additional expansion facilities.

The plain design of the 5big Network may not be to everyone's taste but it is unobtrusive and very quiet in operation. Power comes from an external AC adapter and an ultra-quiet fan makes it possible to site the appliance in an open-plan office without having to worry about noise.

The 5big Network is also designed to be a power-efficient unit. A default auto mode on the three-position power switch lets the appliance go to standby when it's not in use.

As the name implies, the 5big Network has five storage bays (at the back), each of which is fitted with a standard SATA hard disk. Ours came with five 1TB Hitachi disks, giving a nominal capacity of 5TB. Smaller 2.5TB (£595.64 ex Vat) and larger 7.5TB (£1,273.90 ex Vat) models are also available.

Usable capacity will depend on the level of Raid protection applied. By default, the appliance comes configured as a Raid 5 array, so data is striped across all the disks together with parity information, enabling the 5big Network to carry on working even if one of its disks develops a fault. You get 80 per cent free space in Raid 5 mode, which drops to 60 per cent if you switch to Raid 6 where more recovery data is striped across the array to enable it to continue working even if two disks fail. Capacity is further

reduced if you configure one disk as a hot spare, but you can also go for simple disk mirroring or no Raid protection at all.

The disks are mounted in special hot-swap carriers. We found them quite fiddly to open, but then you shouldn't have to change disks that often. Underneath are all the connectors, with a single Gigabit Ethernet port for network attachment. Alongside is a USB and three eSata connectors, all of which can be used to connect extra disks to the appliance to take backups, import data or add capacity.

We found the Lacie hardware very easy to install. A utility is provided to locate the device on the network and all subsequent management is browser-based. The browser interface is plain but straightforward, with simple menus that let you define users and groups, configure shares and schedule backups. You can also change the Raid level, although this can take a long time (up to 30 hours in the worst case) and any data on the array will be lost, so it's a good idea to be sure about the Raid mode you want before starting to use the appliance in earnest.

One big disappointment was the lack of extras often found on competing products, such as built-in web, database and streaming media servers, which are now commonplace. You do, though, get support for multiple file sharing protocols, so the 5big Network can be used on mixed Windows, Linux and Apple Mac networks. Active Directory integration is also available, along with both https and FTP file sharing and an integrated Bittorrent server.

Finally, there's bundled PC and Mac client backup software, rounding off a very solid and straightforward storage appliance solution.

Alan Stevens

Verdict

Pros Five disks; Raid support with optional hot spares; USB and eSata expansion; quiet; integrated backup
Cons Lacks add-on features found on other Nas devices; slow rebuild times
Overall A well-specified Nas unit, but not cheap and alternatives are available that offer more

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £1,074.99 (£934.77 ex Vat) for 2.5TB model

Contact Lacie 020 7250 4105

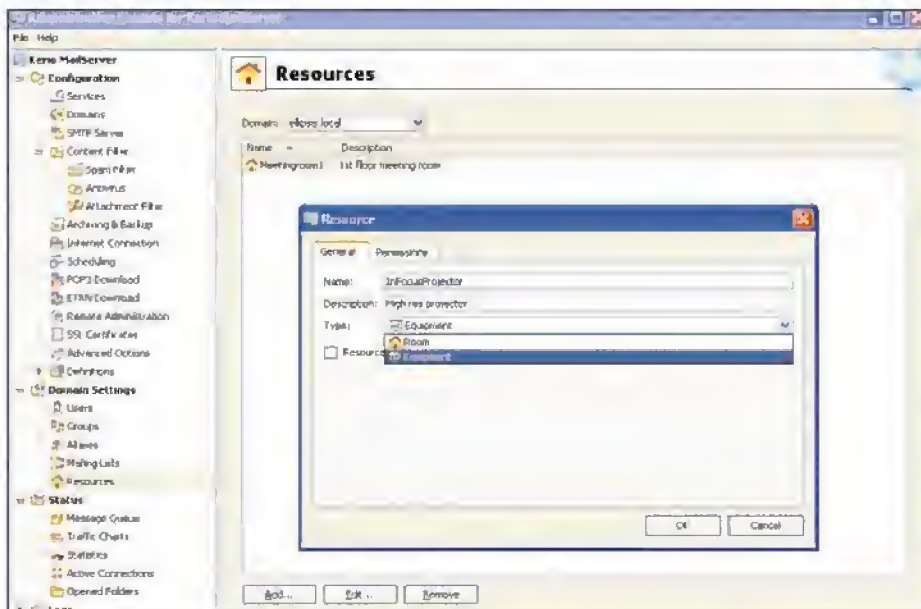
www.lacie.com

Specifications Network-attached storage (Nas) appliance • Five 1TB hot-swap SATA disks • Choice of Raid 0, Raid 5, Raid 5 + spare, Raid 6, Raid 10, Raid 10 + spare configurations • Gigabit Ethernet port • USB2 port and three eSata ports for expansion, data import and backup

SMTP MAIL SERVER

Kerio Mail Server 6.6

An SMTP mail server robust enough to replace Microsoft Exchange



The latest Kerio Mail Server allows users to reserve rooms and equipment for meetings from their email client

Kerio Mail Server is an affordable yet robust SMTP mail server, with plenty to interest small businesses, including integrated anti-virus and anti-spam protection, comprehensive collaboration features, push email and mobile synchronisation. The 6.6 release also includes an Exchange migration tool, making it easy for Microsoft users to switch, and new resource scheduling facilities that let users reserve rooms and equipment via email.

Another key selling point is that Kerio Mail Server can be hosted on Apple Mac and Linux platforms, so you don't necessarily need an expensive Windows licence to run it.

Nor do you need a highly specified server: for our tests, we used an old desktop PC with a 2GHz processor and 1GB of Ram, which would be adequate for up to 20 users. There's even a ready-to-run implementation in the form of a VMware appliance.

The fact that there are no dependencies on host mail services makes Kerio Mail Server easy to install. Changes to DNS and firewall settings may be required – to direct incoming messages to the correct host – but for most small businesses this can be handled by the incumbent service provider, who can also advise on whether a fixed public IP address will be needed.

The mail server runs as a background task. Day-to-day management is via a Windows, Mac or Linux console with a simple tree-structured menu interface. This makes it easy to perform common tasks such as adding users, a task that took us just a few minutes using the integrated database for authentication; support for Windows and Apple directory services is also available.

We opted to use the built-in McAfee anti-virus

scanner, which is a cheap yet very effective way of screening for viruses, Trojans and other malware. Plug-ins for other anti-virus products are also provided, and you can have two scanners active together if you want. You also get a plethora of anti-spam tools including support for local and internet blacklists, an integrated implementation of Spam Assassin and custom content filter rules.

Comprehensive archiving facilities are another welcome option, together with a built-in backup service and scheduler.

On the client side, we used Outlook with the Kerio Outlook Connector, through which we were able to manage messages, contacts and calendars in much the same way as in Exchange. Support for offline use is further enhanced in the latest version, with Mac users, too, able to get access to the collaboration features via native support for the Mac iCal client.

The messaging and collaboration features are also accessible via a web-based client. This has an Outlook-like look and feel, and a cut-down version is available for mobiles.

It's also possible to push messages, contacts and tasks out to mobile users and synchronise wirelessly with a variety of popular devices. No extra middleware is needed to do this, with the software offering enhanced support for iPhone and Windows Mobile clients using Exchange Activesync 12.

In terms of functionality, Kerio Mail Server 6.6 has at least as much to offer the small business as Exchange and at a much lower cost in terms of the software, hardware and management. It is not the only Exchange alternative on the market, but it is up there with the best of them.

Alan Stevens

Verdict

Pros Low startup costs; cross-platform support; integrated security tools; collaboration features; push email and mobile synchronisation

Cons 32-bit hosts only; no instant messaging server

Overall A serious alternative to Exchange for small businesses with limited budgets and technical expertise

Features ★★★★★
Ease of use ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price From £343.85 (£299 ex Vat) for 10 users with McAfee anti-virus

Contact Kerio Technologies

01223 370 136 www.kerio.co.uk

System requirements Minimum of 1GHz processor, 512MB Ram and 40GB free disk space • 32-bit version of Windows 2000 (SP4), XP, Vista, Server 2003/2008 or supported Linux distro • Mac requirements are G4/G5 with 1GB Ram plus OSX 10.3 or later

DIGITAL PROJECTOR

Infocus IN5102

A projector that can give the really big picture



The massive array of input and output connectors at the back of the IN5102 includes an HDMI port



The IN5102 is a big projector for big venues

In previous business projector reviews we've concentrated mainly on products designed for small meeting rooms and offices. But the IN5102 from Infocus is a very different beast, designed for use in much larger venues, and with features and a price to match.

The first thing you notice is the IN5102's sheer size. It's a very big projector, with a large lens at the front and a pop-up door on the top giving access to the manual focus, zoom and image offset controls. The standard lens should be sufficient for most situations but short and long throw lenses can be also purchased, if required.

Another option is a ceiling mount (around £80 ex Vat), into which the projector is installed upside down to allow the bulb to be changed in situ.

Sprouting from the back is an initially bewildering array of connectors, starting with a standard 15-pin video socket for PC attachment (cable supplied). There's also an HDMI port alongside a set of component BNC connectors, another of component RCA jacks, as well as S-video and composite RCA video connectors. Video and audio outputs are also located on the back panel and there's a pair of 4W stereo speakers built in.

A network port lets you set up and control the projector from a browser, and it's possible to attach a wireless adapter, the LiteShow II (around £90 ex Vat), to deliver presentations over a Wifi link.

The on/off button is located on the top of the IN5102, as are a number of other basic controls, although everything you need to do can be done from the remote control provided, which also incorporates a laser pointer.

Turn the IN5102 on and the projector automatically searches for an active source; there are buttons on the remote for manual selection, if needed. Likewise, you can use the remote to configure the projector; it has the usual controls for brightness, colour and picture alignment, including keystone correction. All are easy to set up with no special expertise needed and plenty of adjustment to suit a wide range of conditions.

Like most digital projectors, the IN5102 is driven by a Texas Instruments digital light processor, a proven product that gives excellent reproduction. Teamed with a 275W lamp, it generates a very bright picture, rated at up to 4,000 ansi lumens, that gives the kind of results required in a large space. At around £250 ex Vat the bulb isn't cheap, but it should last for around 2,000 hours, which is about par for the course on this type of product.

Maximum resolution is 1,600x1,200 pixels (UXGA), with support for 16.7 million colours. There's support too for widescreen (16:9) display; the IN5102 automatically switched to this mode when we played a widescreen movie from a 1080p upscaling DVD player attached to the HDMI port.

We got excellent pictures on our tests and, although the IN5102 is not the quietest projector we've tried, the fan is far from intrusive and no louder than on other projectors of this type.

Guaranteed for three years (one year for the bulb), the IN5102 is a versatile large-venue solution, clearly designed with training and education in mind, but equally suited to more general business use. It's not cheap, but it compares well against similarly priced alternatives. Anyone looking for this type of projector will find it a good small-business buy. *Alan Stevens*

Verdict

Pros HDMI input; Texas Instruments chip; optional wireless network interface; optional short/long throw lenses

Cons Bulky; cost of replacement bulbs

Overall A well-made and versatile large-venue projector for training, education and general business use

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £1,591.86
(£1,384.23 ex Vat)

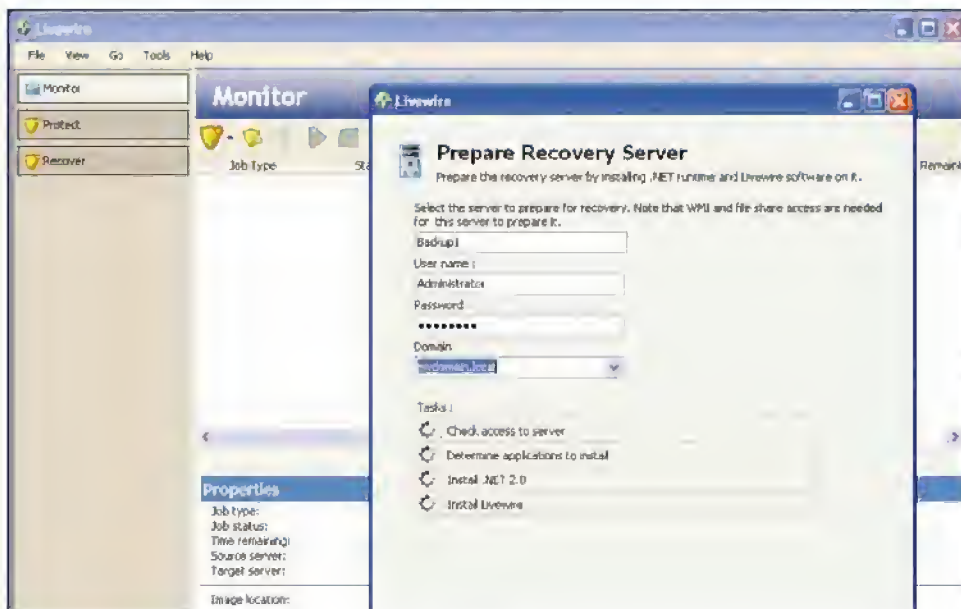
Contact Infocus +31 (0)36 539 2000
www.infocus.com

Specifications Texas Instruments DLP processor, native XGA resolution (1,024x768) projector • 275W lamp • 4,000 ansi lumens • 1,000:1 contrast ratio • 50-120Hz vertical scan rate • 15-pin analogue video, HDMI port • Jacks for component BNC, component RCA, composite RCA and S-video • Video out port • 4W stereo speakers • Remote control • 32dB operation

SERVER BACKUP AND RECOVERY

Double-Take Livewire

A new and much cheaper take on Double-Take



The Livewire agent can be pushed to a recovery server on demand, but the OS needs to be installed first

A popular high-availability enterprise solution, Double-Take can mirror server content in real time and provide rapid recovery in the event of a failure. However, Double-Take is far from cheap and needs a dedicated backup system for each protected server. So now there's Livewire, a much cheaper implementation that uses the same Double-Take replication technology to protect servers, without the need for dedicated backup hardware.

Livewire is designed for use with servers that are not mission-critical and accordingly have no requirement for instant recovery. It's available for use with both 32-bit and 64-bit versions of Windows Server; the first release supports Windows Server 2003, including the R2 release.

Systems to be protected are designated as 'source' servers, with the Livewire software installed on each continuously replicating the data it holds to a repository on a separate 'image' server. Everything on the source can be replicated, including system-state, Registry and other critical system information. There's also support for Microsoft Volume Shadow Copy Service (VSS), to ensure data consistency with databases and other running applications.

The image server can protect more than one source server, the only limitations being disk space, network bandwidth and licensing (each Livewire source needs its own licence). But because it's not a dedicated backup system, there's no quick failover facility should problems arise. Instead, the backup has to be restored to a 'recovery' server, the time involved depending on the amount of data to be copied.

On the plus side, the recovery server doesn't need to be configured with identical hardware to the source.

It can even be a virtual machine (VM), with facilities to automatically provision a suitable VM if using VMware virtualisation, although ESX and Virtual Center are required for this to work. The Livewire management tool can also push the necessary agent out to the recovery server, so you don't need a licensed copy of Livewire pre-installed and waiting around on potential recovery servers just in case.

We found it very easy to use the Windows-based console that manages Livewire. A Protect button tells the software which servers to replicate, and the Recover button will configure recovery jobs. A Monitor button lets you see what's going on, check the logs and so on.

Wizards help with most tasks, and Livewire does a good job at replicating and recovering server data. That said, it wasn't always as easy as we would have liked and you certainly need to put time aside to get everything set up and working, especially as we found the documentation lacking in detail.

Another concern is the lack of support for any kind of bare-metal recovery. Rather, the host OS needs to be recovered first, but, before the recovery process can begin, the Livewire software has to be pushed out or manually installed, all of which adds to the recovery time and work involved.

Cost is a further factor. Although a lot cheaper than the full Double-Take product, Livewire is still an expensive small-business option. Compared to conventional tape backup, perhaps, there's not much in it. But you need to have a Windows host for the Livewire image server and you can't just store the backups on a network share, as you can with some simpler imaging products, which can also recover to bare metal if needed.

Alan Stevens

Verdict

Pros Same server replication technology as full Double-Take product; many-to-one server replication; straightforward management console; VSS support

Cons No bare-metal recovery; expensive for small businesses

Overall Cheaper than the full Double-Take product but alternatives offer the small business more for less

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £1,129.30 (£982 ex Vat) per source server

Contact Double-Take Software
01905 745 711 www.doubletake.com

System requirements Source servers can be Windows Server 2003 or 2003 R2, 32-bit and 64-bit, Standard, Enterprise, Web or SBS edition

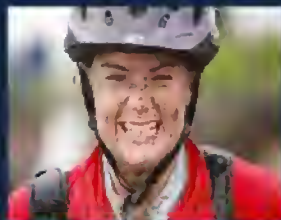
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GONE IN A FLASH

If you've accidentally deleted photos from your camera's memory card, this month's Digital Imaging could be a life-saver. We look at what can go wrong, explain how pictures can be recovered and put the five most popular recovery packages through their paces.

Staying on a storage theme, Hardware concentrates on Raid. With many different Raid arrays available, deciding which one to go with isn't always easy. We detail the most popular arrays and go over the pros and cons of each.

In Databases, we examine the often misunderstood relationship between Access and SQL Server, while the Unix method of handling disks is explained in Linux. We also look at Windows Media Player 11 in Sound, and list some handy shortcuts that will help you get the most out of it.

CONTENTS

120 QUESTION TIME

Our experts answer your questions

124 HARDWARE

Find the right Raid for you by testing the different configurations available

126 PERFORMANCE

Grab video from unprotected sources with an HDMI capture card

128 WINDOWS

Stop Microsoft's Intellipoint mouse software from gobbling up too much memory

138 LINUX/UNIX

Understand how Unix's disk handling differs from Windows' method

140 DIGITAL IMAGING & VIDEO

Rescue your pictures when the memory card fails

142 WORD PROCESSING

We explore the latest version of Open Office

144 SPREADSHEETS

Spice up your Excel spreadsheets with impressive looking graphs

146 SOUND

How to avoid the annoying quirks of Microsoft's Windows Media Player 11

148 NETWORKS

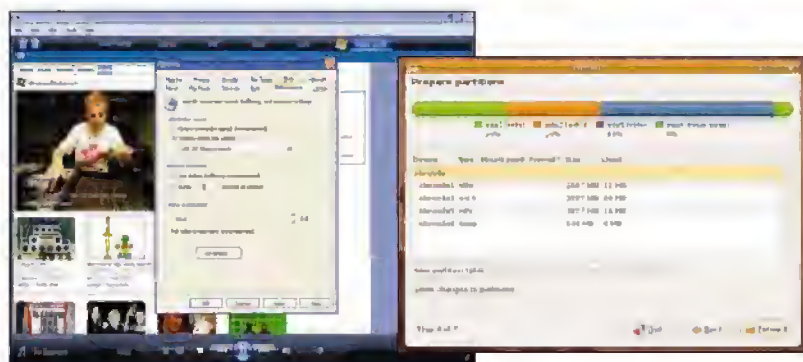
Synchronise files that need to be kept on more than one PC

150 DATABASES

The effect of upsizing on Visual Basic code and manipulating SQL Server via Access

152 VISUAL PROGRAMMING

We look at how Silverlight and Live Mesh are blurring the web/desktop boundaries



Far left: Extending the WMP buffer can improve performance (see page 146)

Left: Typical disk layout on a dual-boot Unix system (see page 138)

HANDS ON

26 PAGES OF...

- ADVICE
- TOP TIPS
- TECHNIQUES
- WORKSHOPS
- HARDWARE SOLUTIONS
- SOFTWARE SOLUTIONS
- Q&A

Advice from our experts

Our experts solve your problems

HARDWARE

Q I have an XP-based Media Center PC that I'm trying to upgrade to handle HD DVD and Blu-ray discs. I've just installed the LG combined HD DVD/Blu-ray drive, but it still doesn't work because my onboard graphics chip, an Nvidia 6150, doesn't handle HD content very well. I'm considering adding a graphics card. I'm not bothered about gaming capability, but would like something that will handle Blu-ray video and take as much of the load off the CPU as possible. It needs to be a quiet (preferably silent) PCI Express card, with VGA and DVI outputs, and inexpensive. I'd also like to be able to drive my 32in Samsung TV at its native resolution of 1,360x768 over an HDMI connection if possible.

Vince Rutter

A The combination of high bit rates and complex compression means playback of Blu-ray and HD DVD titles can cause issues for even fairly modern PC configurations. Indeed, even half-decent dual-core processors can be maxed out at 100 per cent attempting to do the job alone. This is no different to normal DVDs when they first arrived, and coming to the rescue then, as now, are graphics chipsets with hardware acceleration to take the strain.



ATI's 4850 graphics card can be used for Blu-ray picture-in-picture

As you've already realised, your onboard Nvidia 6150 isn't really up to the job, so if you'd like to offload most of the strain from your CPU and guarantee smoother playback you'll need to fit a graphics card with hardware acceleration dedicated to the formats used by Blu-ray and HD DVD.

If you're going for an Nvidia solution, you're looking at a card with a GeForce 8 series or higher with support for Purevideo HD. If you're going for ATI, you'll need a Radeon HD 2000 or higher (HD 4800 series for Blu-ray picture-in-picture), with support for Avivo HD.

When choosing a card, be sure to check the small print, as some models may not fully support the respective acceleration technologies required. You'll also need to install the latest drivers to support the acceleration.

A streaming device such as Pinnacle's Showcenter uses your PC as a display

Gigabyte offers fanless models with HD acceleration, PCI Express interfaces and DVI outputs (which can be adapted to HDMI); its GV-NX86T256H and GV-RX26T256H use the Nvidia 8600 GT and ATI HD 2600 XP GPUs, respectively.

As for driving your display at its native resolution, this is an issue that many media PC enthusiasts face, especially with wide XGA displays. Resolutions of 1,360x768 are normally possible in most graphics drivers (at least those from Nvidia), although displays with 1,366x768 resolutions can prove trickier.

If the graphics driver doesn't offer the desired resolution, you may be able to force it using the Powerstrip utility (<http://entechtaiwan.com/util/ps.shtml>), although there's no guarantee your TV will like the signal. You may also find restrictions with the HDMI interface, in which case you'll have to compare the quality of HDMI with scaling against an analogue connection without scaling.

Q I've got a Dell Dimension 500 desktop, a Sony Vaio FX21M laptop and a Buffalo 500GB Link Station Live Nas (which stores my CD collection). The Dell is connected via Ethernet to a BT Home Hub, as is the Buffalo Nas. The Sony connects wirelessly.

I'd like to play my music in the lounge, which I do at present by connecting the Sony to the TV via an HDMI cable and playing the sound through a Sony Home Theatre System. This way, I can display the CD cover and track information on the TV so it can be seen from a distance. What I can't do is select the appropriate CD from the other side of the room using a remote.

I've looked at the Squeezebox but can't display the whole library listing and the display is too small to read from the other side of the room. I've also looked at the Squeezebox Duet, which initially looked like the



answer, but I've heard the interface is not very user-friendly.

John Reeves

A There are several routes you can take to achieve this goal. First find some means to simply remote control your laptop when it's connected to your TV – there are a number of third-party remotes that would do the trick, and most will integrate with popular software music players. Alternatively, you could run remote control software on a PDA that's also connected to your wireless network.

Second, you could go for a streaming appliance, such as the Squeezebox, although, as you mentioned, the display on the device is not visible from across a room. As you know, the newer Squeezebox Duet comes with a remote that features a screen, so would seem appropriate for your needs. As for the user interface, though, only you can decide whether it's friendly or not.

A third option would be to go for a streaming appliance that uses your TV as a display. Typical examples include the Pinnacle Showcenter 250HD or, if you're streaming from a Media Center PC, a Media Center Extender device such as the Xbox 360.

A fourth option is to go for a media PC system, which again would use your TV as an interface.

SPREADSHEETS

Q I have a list of players and their scores entered on an Excel worksheet. I want to show the highest scorer. I can use the =MAX function to discover the highest score in a column, but the problem I am having is displaying the adjacent name of that scorer in a Highest Scorer cell.

Alan Wiseman

A Excel offers many ways of solving this common problem. Here's just one solution. If the scores are in the range B2:B16 and the players' names are adjacent in C2:C16, you can enter this formula in cell A2:

=VLOOKUP(MAX(B2:B16), C2:C16, 2, 0)

(Key: <= code string continues)

(see screen 1).

Q Using Excel 2007 for my self-employment accounts I often need to count a

Running in full screen

WINDOWS

Q I am trying to use the Sapphire Group's Dataease Database for Dos, but in Vista the Command Prompt option uses a small window that cannot be extended to full screen such as in Windows XP. Is there a way to amend Windows Vista so that the Command Prompt will run in full screen? In XP and previous versions of Windows, pressing Alt & Enter would do the trick, but Vista doesn't respond to this.

Roger Marriott

A You can resize manually by right-clicking on the title bar of the command window and choosing Defaults. In the layout tab, set the screen buffer size, window size, and window position appropriately (see screen). On a 1,280x1,024 display with the default command prompt font, 160x300, 160x80 and 0,0 seems to work. OK out, then click the Maximise/Restore buttons and you should get something approaching a maximised window, though you may have to experiment. A more elegant way is to open an elevated



How to stretch the Vista Command Prompt

command prompt (right-click, run as administrator) then type WMIC and press Enter. Click the maximise button, then type 'exit'. Right-click on the title bar, choose Properties, then turn to the Layout tab and click OK.

SCREEN 1					
	A	B	C	D	E
1	Highest	Scores	Players		
2	Bob	15	Sam		
3		20	Sid		
4		25	Val		
5		30	Art		
6		45	Bob		
7		22	Dot		
8		18	Gus		
9		14	Meg		
10		32	Pam		
11		44	Peg		
12		33	Ron		
13		18	John		
14		39	Betty		
15		17	Simon		
16		29	Fred		

number of items that I have filtered. An example is the Debtors' Ledger. I might want to count those unpaid invoices at a certain date. In other words, how can I count the number of rows in a filtered list?

Vince Leigh

A Look at the Status Bar at the foot of the screen. To the right of the word 'Ready' it will say 10 of 100 records found, assuming your full list has 100 records and you've filtered out 10.

Excel offers various ways of displaying the highest scorer in a game

If you want a cell to display the number of records displayed on the short list, and your list has a header row, enter in the totalling cell:

=SUBTOTAL(2,A2:A101)

If you used

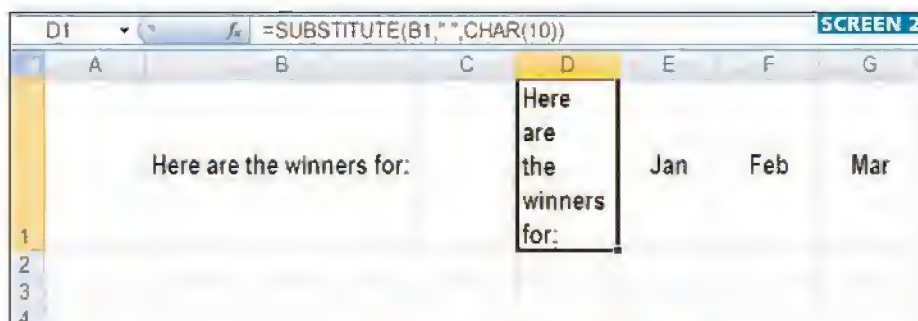
=COUNT(A2:A101)

it would count the complete list.

Q I can't get along with the touchpad on my laptop. At home I have a USB mouse. When travelling I like to use keyboard shortcuts, but I can't find one for setting an Excel column width. Is there one?

Aidan Walsh

A As is typical with Excel, you have a choice. The universal shortcut, including Excel 2007, is Alt & O. Press C, then W, type in a width number and then press Enter. In Excel 2007 only, you can also press the Alt key by itself, then successively, H, O and W. Type in a width number and press Enter. If you have a real memory for shortcuts you could also press Ctrl & Spacebar to select the entire column, press Shift & F10 to display the right-click menu, then press C twice. Press Enter, type in a width number and press Enter again.



SCREEN 2

Q I have a title in one Excel worksheet cell and want to put each word on a new line. I know I could press Alt & Enter after every word but wondered if there was a faster way of doing it.
Johnnie Mason

A You could enter text normally in a spare cell and in your title cell use the SUBSTITUTE function. For example, if the text were in cell B1, in the other cell enter =SUBSTITUTE(B1," ",CHAR(10)) Then right-click on that cell and choose Format Cells, Alignment and check the Wrap text box. That will do it (see screen 2).

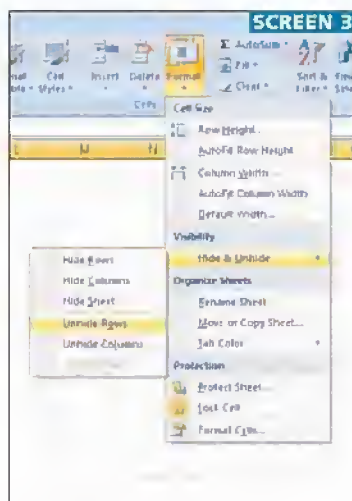
Q If I hid the top rows of an Excel 2007 worksheet, I'm unsure how I could make them visible again. Any suggestions?
Tim Boden

A I'm glad you avoided that dreadful Microsoft word – unhide. Like uncheck, it makes me uncomfortable. With the mouse you can point to the bottom of the SelectAll button, which is to the left of the column letters and above the row numbers. When it makes an equals sign with opposing arrows, right-click and choose Unhide.

'I'm glad you avoided that dreadful Microsoft word – unhide. It makes me uncomfortable'

Alternatively, press Ctrl & G, or the F5 key. This opens the Go To dialogue box. If the hidden rows are 1 through 4 enter 1:4 in the Reference: box. Click OK. This selects the invisible rows. Under the Home tab, click Format, choose Hide & Unhide under Visibility, then select Unhide Rows (see screen 3).

Q I'm new to spreadsheets and trying to learn Excel. How can I enter the day's date



Above: The Substitute function helps you wrap a title

Making hidden rows visible again is simple

simultaneously in a range of cells?
Colin Peel

A If the range consists of continuous cells, highlight the range and press Ctrl & semi-colon (;). Then press Ctrl & Shift & Enter. If it's a continuous range, click on the first cell, hold down Shift, click on the last cell then continue as before.

DIGITAL IMAGING

Q I have a small problem with Proshow Gold (so, it seems, does everyone else). How can you remove the annoying

Photodex letterbox that appears at the beginning of every sequence?
Keith Lambert

A Click the Create output button and select an output option in the Create Output window. Then click the Shows tab and uncheck the 'Include Intro Show' checkbox. Alternatively, you can replace the default Photodex intro with your own by clicking the Select Show button and

choosing any previously created slideshow (see screen 4).

Q My wife is a teacher and it would be very useful to have a device to show pupils' work, large enough for a whole class to see. We have tried mounting a webcam approximately 300mm above a desk, facing downwards toward a sample of pupil's work directly below. The image is captured in real time and displayed using a laptop connected to a digital projector, which displays the image on a screen for pupils to see.

It is important that the image is sharp enough for the pupils to be able to read the text; however, the video image occupies only a small area of the PC screen (the best camera we could find was 800x600 pixels), thus wasting a lot of the usable area going to the interpolated 1,600x1,200 resolution. Zooming in using software gave a grainy image.

Do you know of any high-quality webcams that might be able to do this job, or maybe a 'normal' digital camera from which a high-quality video signal is available? I have seen products called 'visualisers' that do this job, but they are outside our budget (circa £700).

James A Dove

A You're unlikely to find a webcam that provides such a high-resolution image, but there are other options. You could use a camcorder or, as you suggest, a digital still camera that has a live video feed. Your existing software will probably recognise the camera as an input device; if not, take a look at Webcam DV (www.webcamdv.com).

Another option, albeit less immediate, would be to use a flatbed scanner. A budget A4 flatbed costing less than £50 would provide a higher resolution image superior in quality to even an HD camcorder and would take only a few seconds to scan and display a page.

DATABASES

Q I'm developing an Access database for a local charity. The database is split, with the data tables stored in databases on the server and a front end on each desktop machine to access the data. A copy of the front end is stored on the server and when I make changes it is to this version.

Configuring the Bios setup

HARDWARE

Q Barry Shilliday's excellent article, *Join the Linux Revolution (PCW, Christmas 2009)*, fell short for a

novice like me with the magnificently disingenuous advice on loading Linux: "Once the CD has been burned, you are almost ready to go. The PC must be configured to boot from the CD, which can be done via the Bios setup if it isn't already configured."

I pressed F8, which allows my Windows XP SP2 to be loaded in safe mode.

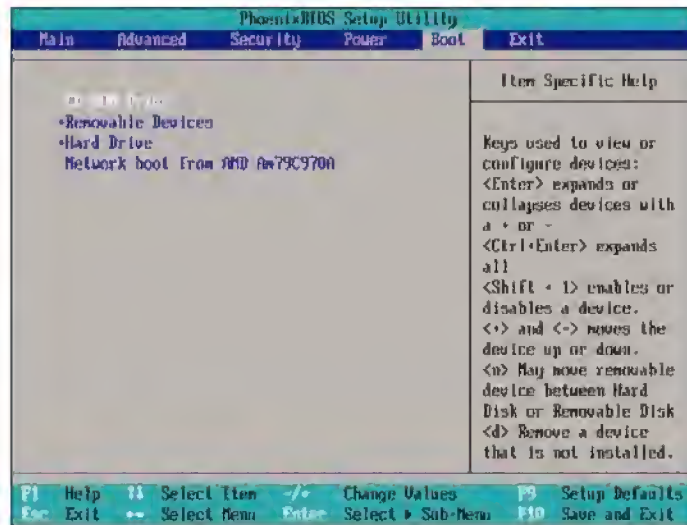
Nothing about being able to boot from a CD. Please, how do I configure the Bios setup, when it's at home?

Rodney Russell

A The PC's Bios (short for Basic Input/Output System) is normally accessed by pressing a key (Del or F1 are common ones) when the PC first starts

and before the operating system starts loading. You should see a message to this effect – 'Press <keyname> to enter setup' is one such example. Pressing this key takes

you into the Bios setup menu, where you can change various parameters such as the boot-up sequence – it's usually in a section called 'Boot priority' or similar. Be careful about making changes here, if you're not familiar with the terms. It's hard to give specific instructions as every manufacturer offers different options in the Bios menus. Contact the vendor of your PC, or, if it's self-built, look for a manual for the motherboard online.



The Bios lets you change various parameters

Each time I make additions to the front end it means having to copy the server-based version to each computer – of which there are about 30.

My question is how to get changes I make to the front end – in other words, queries, forms, reports and code modules – to be automatically replicated to each desktop machine when it logs onto the server.

Barrie Potter

A The good news is this isn't really a database problem, it's a networking one. Put the 'front end' copy of the Access database on the server. Then you have two options.

First, you could write a network login script that copies the file to the user's machine every time they log in. This can be as simple as a batch file that runs when each machine starts up and connects to the network. For instance, if the master copy is on drive H: and users keep the application on drive C: in a folder called My Applications, the batch file could, at its most basic, read:
Copy h:\AccessFrontEnd.mdb
C:\MyApplications\Access
FrontEnd.mdb

For extra points, you could write this so that it checks for the version number of the Access file and only copies it when that has been updated.

Alternatively, write a batch file on the server that distributes the file to 30 sub-folders on the server, each of which is solely used by each user. Of course, putting the front-end Access database on the server will lead to increased network traffic. Whether this is likely to be a problem depends on local conditions, such as staff working patterns, bandwidth, and so on.

The advantage is that the files which need updating now reside on the server. Either way, the distribution of the Access front end should be much easier. *PCW*



The Photodex
letterbox In
Proshow Gold can
be removed easily

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Windows win@pcw.co.uk
Word processing wp@pcw.co.uk



Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing.

→ Comments welcome on the Hardware column.

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Which Raid is right for you?

Testing the different Raid configurations can pay performance dividends

Raid has long been exploited by servers and workstations to deliver superior disk performance, whether in terms of speed, reliability or a combination of the two. PC enthusiasts have also found Raid a valuable ally. But with a variety of flavours to choose from, not to mention configuration options, it's often hard to know whether you're getting the best from your hardware. Standard benchmarks may not provide an accurate reflection of typical usage.

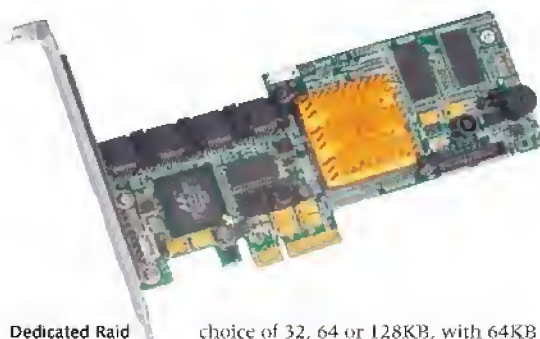
So this month's column revisits the eternally popular subject of Raid, explaining the different options and configurations and, crucially, testing them with both pure benchmarks and a popular real-life application.

Test system

To put different Raid configurations to the test I used a PC based on an Intel Core 2 Duo E6700 with 4GB of Ram fitted into an Asus P5W DH Deluxe motherboard. This booted Vista from a 400GB Seagate hard disk connected to the motherboard's main controller and used a Promise Supertrak EX8350 controller (www.promise.com) to host a separate Raid array; this card has since been superseded by the EX8650, which costs a not inconsiderable £250, but for decent hardware-accelerated Raid 5 performance, it's the way to go.

For the various arrays I used identical Samsung HD501J 500GB disks. As explained in the box on the next page, three disks can offer 1TB of storage in a Raid 5 array, or 1.5TB in Raid 0. Or you could go for Raid 1 – dispensing with one disk as it works with paired disks – for 500GB of storage.

Like most Raid controllers, the EX8350 lets you not only choose the Raid level, but also the stripe size. This refers to the amount of data written to each disk in turn. The EX8350 offers a



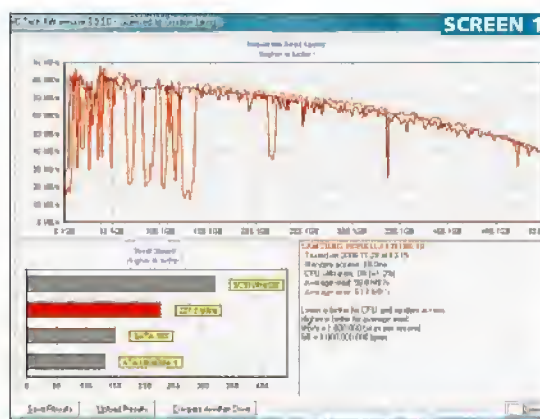
Dedicated Raid controllers such as this Promise Supertrak EX8350, or its successor the EX8650, offer hardware-accelerated Raid 5 for superior performance

choice of 32, 64 or 128KB, with 64KB the default. If the data being written is below the stripe size, it will exist on only one disk, losing the performance benefits of being accessed from multiple disks simultaneously.

It's important to consider the kind of data you're working with before selecting a stripe size, as you can't usually change the stripe setting without losing your data and building a new array.

The stripe size is different from the allocation unit size defined by a file system like NTFS. As far as the PC is concerned, a Raid array is exactly the same as a single hard disk: it's just raw storage waiting to be partitioned and formatted. So the stripe size only has an impact at the actual hardware level itself, where the controller decides which disks the data will be written to,

HD Tach's report on a single 500GB hard disk connected directly to a motherboard's controller



It doesn't affect data efficiency, where a small file could find itself wasting potential space by occupying a larger allocated unit size.

To test different stripe sizes, not to mention the different sector sizes also offered by the EX8350, I used the standard HD Tach benchmark from Simpli Software (www.simplisoftware.com). I also timed how long it took to render a 10-minute AVI file in Adobe Premiere Pro consisting of up to five overlaid video tracks in DV format.

The unedited video files and the final rendered edit would be stored on the Raid array to test both its read and write performance in a real-life environment. Such real-world tests are crucial as a pure benchmark may not provide an accurate account of how you'll actually use the hardware.

The results

For comparison I started by testing just one of the 500GB disks connected directly to the motherboard's controller. HD Tach gave average read and write speeds of 58.8 and 63.8Mbytes/sec respectively and a burst rate of 227.5Mbytes/sec; the Premiere render took 195 seconds (see screen 1).

I then connected two of the 500GB disks as a Raid 1 array (giving a 500GB total capacity) using a 64KB stripe size and 512KB sector size. HD Tach gave average read and write speeds of 66.7 and 34.3Mbytes/sec respectively and a burst rate of 140.8Mbytes/sec, while the Premiere render took 181 seconds. So while HD Tach reported slightly faster read and much slower write speeds, the final Premiere job was still quicker overall.

Next, the two disks were set up as a Raid 0 array (1TB total capacity), again using the default 64KB and 512KB stripe and sector sizes. This time HD Tach reported average read and write speeds of 110.8 and 97.2Mbytes/sec

How Raid works

Raid stands for Redundant Array of Inexpensive (or Independent) Disks, and exploits two or more disks to enhance performance, reliability or a combination of the two. There are several different types of Raid; here we'll cover the three most common.

Raid 0 stripes data, interleaving it across two or more disks. Since interleaved disks can be read and written to simultaneously, this can greatly boost performance. Raid 0 also allows you to enjoy the full capacity of all the disks in the array, so an array of three 500GB disks would offer 1,500GB of capacity.

But Raid 0 has no fault tolerance: if one disk fails, you lose everything. This makes it less reliable than a single disk, and only suitable for non-critical data storage, such as a scratch disk or virtual memory.

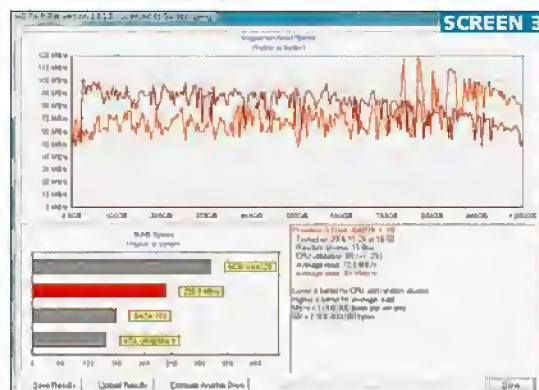
Raid 1 mirrors data, storing an identical copy of it on a second disk. Should one disk fail, you can still access the data on the other, allowing you time to fit a replacement, rebuild the array and enjoy full fault tolerance again. The downside is that you lose half your total disk capacity to mirroring, so two 500GB disks would give you only 500GB of total capacity.

Raid 5 employs three or more disks and stripes data across them. The clever part is that parity data is also stored on each disk, which gives fault tolerance. Should one disk fail, the data on the array remains available. As with Raid 1, you can simply fit a replacement disk and rebuild the array to enjoy full fault tolerance once more.

As with Raid 1, there's a capacity price to pay, but you only lose one disk's worth of capacity in the entire array with Raid 5.

The overall losses decrease as you fit more disks. So if you have three disks in a Raid 5 array, you lose 33 per cent: in a three 500GB disk array, you would have 1,000GB of storage. Configure four disks with Raid 5, though, and you'll only lose 25 per cent: if they were 500GB disks, you'd have 1,500GB of storage in total.

The downside to Raid 5 is a potential hit on write performance due to the parity calculations. Common software-based Raid 5 configurations can be very slow on write times, although controllers with hardware-accelerated Raid 5 (which are rarely cheap) can hugely improve write performance.



The same three disks reconfigured as a Raid 5 array using the Promise controller. The average read and write speeds have fallen, but it's still faster than the single disk while also boasting redundancy

Tach report average read and write speeds of 68.2 and 81.7Mbytes/sec respectively and a burst rate of 238.2Mbytes/sec, while the Premiere render took 210 seconds. A slight adjustment across the HD Tach results, but again a quicker render, if not as quick as the original single disk.

I then repeated the Raid 5 tests using the three different stripe sizes at each of the controller's sector options of 1,024, 2,048 and 4,096KB; the setting used above was the default 512KB. The average read and write times remained pretty similar, although larger sectors improved the burst rates. The Premiere renders were within a few seconds of the default scores, though, so nothing to get too excited about for this particular application.

Big variations

The results prove there are significant differences in the performance of each Raid level, and subtler, but measurable differences between stripe sizes. Revealingly, though, the scores measured by a pure benchmark such as HD Tach may not be proportionately or even accurately reflected in a real-life environment.

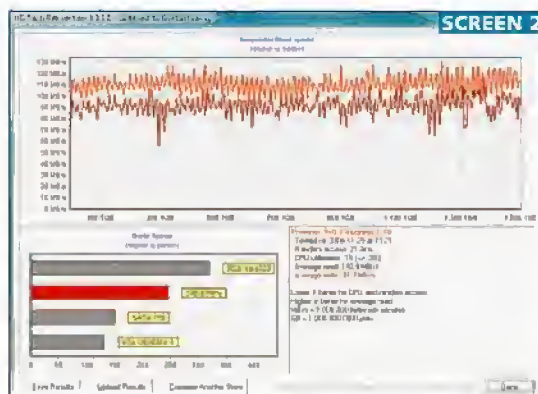
Our Premiere render pushed sustained throughput for read and write on larger files, but a database, web server or game would make different demands. So perform your own tests using a controller's different settings with your desired application and data before committing long term to a specific configuration. For video rendering, Raid 0 with medium to large stripe sizes remains hard to beat for speed, but remember to copy finished projects onto another disk afterwards to protect against Raid 0's lack of fault tolerance.

If you find Raid invaluable for a certain application, we'd like to hear more about it and, in particular, any settings you found beneficial. **PCW**

respectively and a 196.7Mbytes/sec burst rate, while the Premiere render took 168 seconds. Both HD Tach scores were clearly much faster, which is reflected in the quicker render.

I then connected a third disk and built a new Raid 0 array (1.5TB total capacity), again with the defaults. HD Tach reported average read and write speeds of 110.9 and 91.9Mbytes/sec respectively and a burst rate of 246.8Mbytes/sec (see screen 2), while the Premiere render took 156 seconds. The average read score may have been much the same and the write a little slower, but perhaps influenced by the much faster burst rate, the render was the quickest yet.

I then switched to Raid 5 using the three disks (1TB total capacity), but also reduced the stripe size to 32KB. HD Tach gave average read and write speeds of 66.6 and 69.2Mbytes/sec respectively and a 196.2Mbytes/sec burst rate, while the Premiere render took 240 seconds. HD Tach's figures may have been a little quicker than for



the single disk, but the Premiere render was the slowest yet.

In the next test I increased stripe size to the default 64KB. HD Tach reported average read and write speeds of 72 and 80.9Mbytes/sec respectively and a burst rate of 239.6Mbytes/sec (see screen 3), while the Premiere render took 218 seconds – a big improvement to all the scores, just by adjusting the stripe size. Next, the biggest stripe size of 128KB saw HD

HD Tach's report on three 500GB hard disks configured as a Raid 0 array using the Promise controller. The average read and write speeds have increased, but there's no fault tolerance



Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing.

→ Comments welcome on the Performance column.

Email performance@pcw.co.uk

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Capturing HDMI video

The search is over for a simple yet flexible device for video enthusiasts

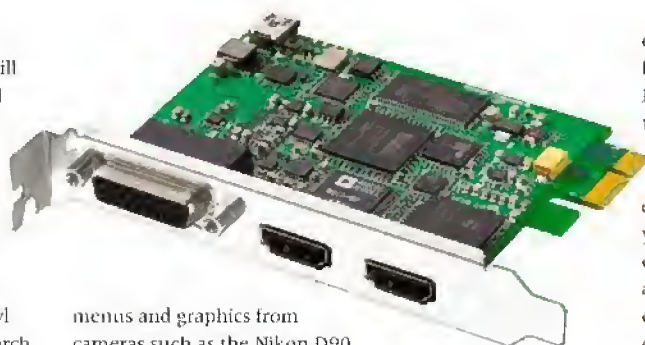
At some point, every hardware enthusiast will encounter an issue and wonder if there's a device, adapter or cable that will fit the bill. Maybe it's for a weather station, a media PC enhancement, robotic control, or simply connecting an old piece of kit to a new system.

What normally follows is a trawl around specialist suppliers, or a search for like-minded individuals on forums. Sometimes the search proves fruitless; other times a solution is weighed down by caveats that effectively render it unusable. Occasionally, though, you'll strike gold with a product that not only fulfils your requirements, but goes way beyond – that's why this month's column is devoted to one of the neatest peripherals I've tested in recent times.

HDMI capture

My search began with a desire to capture video from an HDMI source – not protected movies from a Blu-ray player, but for grabbing video and live menu graphics from a new breed of digital cameras for reviews and video demonstrations. A search for HDMI capture cards brought me to the Intensity from Blackmagic Design (\$249, www.blackmagic-design.com). Intensity is a short PCI Express card that requires a single-lane slot, but also works in x4, x8 and x16 lane slots. It features a pair of HDMI ports that can be used for capturing video from one HDMI source while outputting a signal to an HDMI display.

Intensity can capture unprotected HDMI content at the full 1,920x1,080 resolution under Windows PCs using either a Motion JPEG or uncompressed recording format, along with grabbing still frames if desired. At this point, my initial requirement was fulfilled. Intensity could grab HD



menus and graphics from cameras such as the Nikon D90 over its HDMI port – but the card offered a few additional possibilities.

While HDMI has become the standard interface for connecting domestic HD components, you may think the ability to capture it on your PC would have limited use – especially as protected content is ruled out. HD camcorders playing your own content are a possibility, but most people use Firewire or USB ports for getting such footage onto their computers.

Capturing over HDMI does have a neat advantage, though. Video enthusiasts will know that while most modern HDV camcorders feature sensors with 1,920x1,080 resolution, the HDV format itself squashes it into a lower resolution 1,440x1,080 frame to save space. Footage that has already been recorded to tape will be fixed at this resolution whether you capture over Firewire or HDMI.

But most HDV camcorders output a live signal over their HDMI ports at the full 1,920x1,080 resolution, and cards such as the Intensity can capture it, giving you 33 per cent greater horizontal resolution. Obviously, it's not practical to lug a PC around on holiday just to capture the full resolution from a tethered HDV camcorder, but there are many studio-based applications that can exploit it.

In practice, this really works. I tried it with a Canon HV30 and found that live video captured over HDMI had a

quality advantage over recorded HDV footage. You will need to switch the HV30's TV screen option to 'off' and toggle the display button to eliminate the on-screen icons, though.

Intensity will also capture a wider colour gamut with 4:2:2 sampling, and you can record the signal with milder compression than HDV, or even none at all. While both will obviously consume more storage than heavily compressed formats, you'll save processing time when editing.

Since DVI shares the same video specification as HDMI, there's also the possibility of capturing a PC's desktop image with an adapter. This isn't guaranteed to work, but if you set your desktop resolution to a typical HD mode, such as 1,920x1,080 or 1,280x720 at 60Hz, the Intensity stands a good chance of capturing it. Video editors will also appreciate the ability to preview projects over HDMI to a TV set rather than a PC monitor.

A few caveats

There are, of course, a number of things to watch out for. First, you'll need plenty of fast storage at your disposal. The mildly compressed 1,080 capture mode consumes about 12Mbytes/sec, while the uncompressed version gobbles 119Mbytes/sec. In contrast, HDV nibbles away at 3.125Mbytes/sec. You'll also only exploit the maximum quality if you're capturing the live output from a device over a tethered HDMI connection; again there are still speed benefits when editing less compressed footage.

The Intensity card is a flexible product with some neat features for video enthusiasts, and the Pro version will additionally capture analogue video from composite, S-video and component sources, again in standard or high definition, along with the option to up- or down-scale. **PCW**

The Intensity Pro card allows you to capture footage from an unprotected HDMI source and could deliver superior quality from your HD camcorder than a traditional Firewire link



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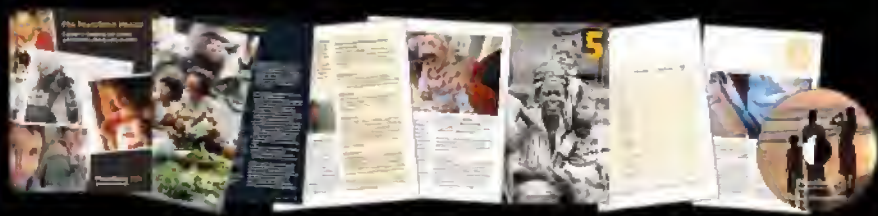
PhotoVoice: working with positive negatives

“PhotoVoice is working to bring new voices to photojournalism: hear the world through their eyes.” Sebastião Salgado

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Tim Nott is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family.

→ Comments welcome on the Windows column.

Email windows@pcw.co.uk

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Greedy Intellipoint

The perils of Microsoft's memory-hungry mouse software

One of the startup items on my XP computer is Ipoint.exe. This is the Intellipoint software that remembers custom button settings for Microsoft mice; both general settings and those for individual programs. It also seems to be responsible for popping up a warning when the batteries in a cordless mouse are low. And if I start my PC and then, when everything has loaded, press Control & Alt & Del, I can see the process in the Task Manager, taking up a massive 23MB of memory. That's about the same as Word running or, to give another perspective, 10 times the amount of Ram I had in my first Windows 3 PC. Killing the process loses any custom button assignments, but apart from that the mouse works normally. Running Ipoint again restarts the process using a similar memory footprint.

After a web search I found more problems with Ipoint.exe. Several users complained of memory leaks when using the Windows magnifier. In other words, Ipoint.exe consumed more and more memory but didn't release it. There's a Youtube video of this ascending into the 170MB range. Others complain of the program causing flicker in applications. The word in the forums is that the latest version cures the flicker problem, so off I went to download it. Lo and behold, the new version (6.30.192.0) weighed in at 28MB of memory, and by judicious use of the magnifier, I managed to get this up to 31MB. And then suddenly, when of course I wasn't looking, the memory used by Ipoint.exe dropped to a reasonable 3-4MB. And after restarting Windows XP? Yes, back to 28MB.

Further painstaking scientific observation – also known as an afternoon wasted – showed Ipoint.exe

would settle down to anywhere between 300KB and 4MB, but leapt up into the 20MB range when the Instant Viewer – a sort of poor man's Flip 3D which shows previews of all open windows on the desktop – was invoked. This may be because it has to paint bitmaps of the window images, and it did settle down to a more reasonable level after a short delay (see screen 1). So, in fairness, it does seem Microsoft has managed to get Ipoint.exe to give back memory, but why it needs so much to start is still a mystery.

Ipoint curbs its memory appetite

SCREEN 1

Image Name	User Name	CPU	Mem Usage	Base Pri
explorer.exe	Tim	00	23,832 K	Normal
GoogleUpdate.exe	Tim	00	1,268 K	Normal
guard.exe	SYSTEM	00	948 K	Normal
Ipoint.exe	Tim	00	472 K	Normal
impe.exe	Tim	00	7,152 K	Normal
lsass.exe	SYSTEM	00	1,160 K	Normal
MSASvc.exe	Tim	00	10,814 K	Normal
Wdftg.exe	SYSTEM	00	35,132 K	Normal
svchost.exe	SYSTEM	00	4,368 K	Normal
rundll32.exe	Tim	00	3,192 K	Normal
smss.exe	SYSTEM	00	2,224 K	Normal
services.exe	SYSTEM	00	3,560 K	Normal
smss.exe	SYSTEM	00	384 K	Normal
svchost.exe	SYSTEM	00	4,680 K	Normal
svchost.exe	SYSTEM	00	4,024 K	Normal
svchost.exe	SYSTEM	00	4,984 K	Normal
svchost.exe	NETWORK SERVICE	00	4,560 K	Normal
svchost.exe	SYSTEM	00	27,608 K	Normal
svchost.exe	SYSTEM	00	1,274 K	Normal

Process: 40 CPU Usage: 2% Comm: Change: 47M / 384K



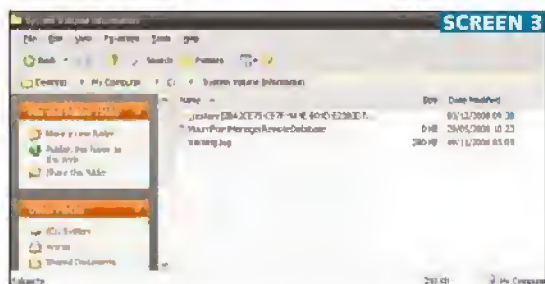
You can add permissions to the System Volume Information folder

Restore points

The System Restore feature of Windows was one of the better features introduced in the Millennium Edition, and continues through XP and Vista. As you probably know, it lets you 'roll back' Registry and System files to a previous state, and is invaluable when your PC starts misbehaving. As well as Windows creating regular restore points automatically, you can create these on demand from All Programs, Accessories, System Tools, System Restore. If you plan to edit the Registry or make system changes, then creating a restore point first is essential.

One mystery, however, is where Windows stores these restore points. The short answer is that you don't really need to know. But since you're reading the Hands On section of PCW, your curiosity will probably make you want to know. So, here's the answer to the mystery. First, in XP Pro you need to go to Folder Options, View and make sure that 'Show hidden files and folders' is selected and that 'Hide protected operating system files (recommended)' is unchecked.

Having done this, you should see in each disk partition a folder named System Volume Information. This is where the restore points are stored, but you still won't be able to open the folder without some further manipulations – you'll just get an 'Access is denied' message. So the next step is to right-click on the folder, select Properties and turn to the Security tab. If you don't see a security tab, then close the Properties, go back to Folder Options, View, and clear the checkbox next to 'Use simple file sharing' – it should be the last item in the list. OK out of Folder Options, then close and re-open Explorer. You should find that folders – including System Volume Information – now



SCREEN 3

have a Security tab (see screen 2). Turn to this and click on the Add button, then type your username in the box provided and click OK. This will take you back to the Security tab with your name added. Since this is just an exercise in curiosity, stick with the default permission settings for Read and Execute, List, and Read.

OK out of the properties, and you'll find you can open the System Volume Information folder. You have to be logged on with an administrator account to change (or even see) the contents of the Security tab, but curiously you can add a non-administrator user to the list of those entitled to open the folder. Finally, if you had Simple File Sharing enabled before, you can return to Folder Options and turn it back on. You'll still be able to open the System Volume Information folder but you won't be able to change the permissions unless you temporarily turn it off again (see screen 2).

Feedback frenzy

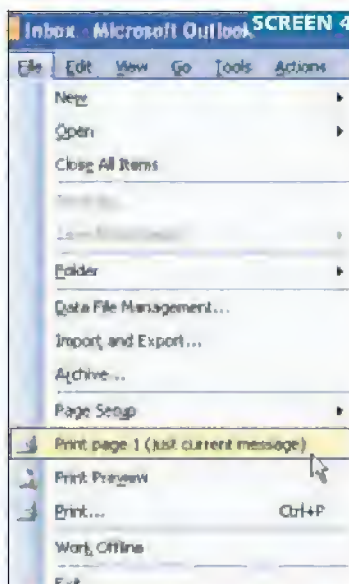
It has been a record month for reader feedback, and we're pleased to be able to include four excellent tips relating to issues aired in this column during the past few months, ranging from icon selection to creating multiple sub-folders. Please keep them coming – especially if you read something in this column that you think is just plain wrong. That way, not only can we learn from our mistakes but we can also pass the corrections on.

Rope and throw and brand 'em

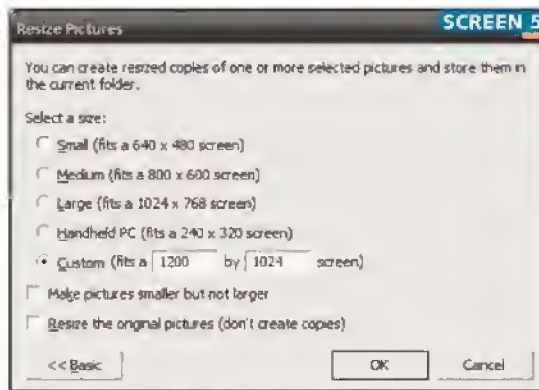
Further to Jason Murray's problem with deleting desktop icons (*PCW* Christmas 2008, Question Time), David March reminds us of a useful tip. You can 'lasso' a collection of icons by left-clicking and dragging around them. The collection stays highlighted and can be deleted by pressing the Delete key. Several 'islands' of icons can be selected by holding down the Ctrl key while dragging around subsequent sets.

Above: Showing the contents of System Volume Information

Right: Another solution to the Outlook printing problem



SCREEN 4



SCREEN 5

Resizing pictures with the XP Powertoy

Yet more Outlook

In September 2008, we mentioned the inability of Outlook to print a single page of a message, or curtail the previous quoted messages. Over the ensuing months we've had many workarounds from readers, and it seems many people (with the obvious exception of Microsoft) are concerned about this. The latest offering comes from Mike Vaughan Edwards, and is an Outlook add-in called PrintPage1. This adds a toolbar and a file menu item to Outlook that prints just the current message, discarding the history of quoted messages. It's free for the first 20 prints and after that a licence

will cost £1, which should quickly pay for itself in consumables. You'll find it at www.printpage1.com (see screen 4).

Resizing pictures

Further to the Christmas issue's comments on resizing pictures for emails, Peter Atkinson points out that there is a Microsoft Powertoy that adds a 'Resize' option to the right-click menu. As well as offering to make copies of images in sizes ranging from 240x320 to 1,028x768, it lets you choose a custom size and has an option to replace the originals rather than create copies. You'll find it at www.tinyurl.com/553fw6 (see screen 5). It only works with Windows XP, but the email trick works with Vista – you don't have to send a message, just right-click on the resized attachment and 'Save As...' then cancel the message.

MKDIR – it can be done

In January's column we looked at creating multiple sub-folders using MKDIR from a command prompt. I stated that you can't direct MKDIR to take input from a file. Not so, said Simon Smillie and Richard Gaze. The FOR-DO command lets you pass the contents of a text file to almost any other command. So, first create a text file containing the names of the folders, each on a separate line. Save this in the folder in which you want to create the sub-folders (this will save you the trouble of having to type out the entire path) as Folders.txt. Next, open a command prompt in that folder, and type:

```
FOR /F %n IN (folders.txt) %  
DO MKDIR %n
```

(Key: % code string continues)

You can use any single letter instead of n, and the command will take each line of the file and DO a MKDIR with the name it finds. A variant is to use:

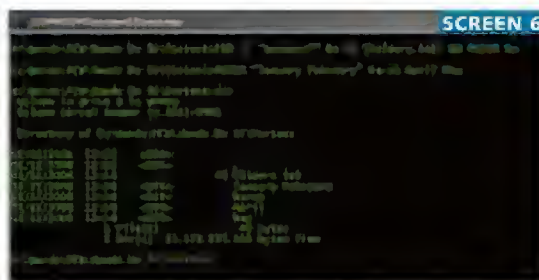
```
FOR /F "tokens=*" %n IN %  
(folders.txt) DO MKDIR %n
```

This version will process items on the same line, separated by spaces. If you want to create folders with a space in the name, then use the second method and enclose the name in double quotes. So, for example, a text file containing the line

```
"January February" March
```

will produce four folders when fed to the FOR command, the first being named "January February" and the others taking the name of the following months (see screen 6). **PCW**

Using FOR to make directories



SCREEN 6



BACK UP YOUR PC

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Ensure your PC is fully protected from unforeseen events such as viruses or hard drive failures by backing up your PC.

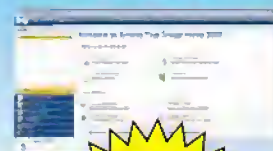
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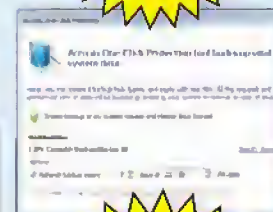
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12 FROM THE MAGAZINE

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DiskInternals Mail Recovery
Glary Undelete 1.0
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Microsoft Image Resizer
PC Inspector File Recovery 4
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Ultimate Boot CD 3.22
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Magic ISO 5.5.273
Power Archiver 2009 v11.03
Rapid CSS 2008 v9.3
Smart FTP 3.0.1024.32
Syncback SE 5.2.1.0
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East-Tec Eraser 2009
Kaspersky Antivirus 2009
Kaspersky Internet Security 2009
Norton Antivirus 2009
Nova PDF 6
Paragon Hard Disk Manager 2009
Professional
System Mechanic 8.5
VMware Workstation 6.5.1
Webroot Internet Security Essentials

ON THE 8GB DVD

EVERYTHING ON THE CD PLUS...

1 FULL VERSION

Paragon Drive Copy 9 SE

2 FREWARE

Antivir Rescue CD 11.2008
VMware Player 2.5.1

1 SHAREWARE

Ashampoo Photo Commander 7.1

5 LINUX & OPEN SOURCE

Fedora 10
GParted Live CD 0.3.9-13
Parted Magic 3.3
Puppy Linux 4.1.2
SIAX 6.0.9
Tiny Me 2008.1

RESOURCES

(OVER 160 APPS, 12 CATEGORIES)

Audio, Video & Photo
Backup, Restoration & File Management
Browsers, Managers & Extensions
Burning & Media
Business, Office & Collaboration
Chat & Communication
Developer & Web Development Tools
General Utilities
Internet, Networking & Wifi Tools
Optimisation & Diagnostics
Portable Applications
Security

4 GAME DEMOS

Cinema Tycoon
Hotel Giant 2
New Star Soccer 4
Nikopol Secrets of the Immortals

THE UK'S BIGGEST & BEST SOFTWARE COLLECTION!

USING THE COVER DISC

The PCW cover disc uses a web browser-style interface. To get full functionality, you'll need to use Microsoft Internet Explorer (version 5.5 or later). Unfortunately, Netscape doesn't properly support this software. However, we have also provided links to the featured programs, so you can still copy them to your hard disk or install them manually (the standard download dialogue box will appear). Programs can be found in the \software\ folder on the disc.

STARTING THE DISC

The CD-Rom (or DVD) should auto-start. If it fails to do so, double-click the CD-Rom/DVD icon in My Computer or open the terms.htm file on the root of the disc.

PROBLEMS?

We cannot give support on programs on this disc. If you have problems running the disc, follow these guidelines:



PROBLEMS INSTALLING/RUNNING THE SOFTWARE

Check the support page on the disc or check the manufacturer's site.

GENERAL DIFFICULTIES

For details on cover disc support and frequently asked questions about the discs go to www.pcw.co.uk/disc-support for faulty or damaged CDs/DVDs please email support@pcw.co.uk for a replacement, giving the details requested on the website. If you have no internet access, call 020 7316 9706 between 10am and 6pm Monday to Friday. Please note that PCW cannot give technical help/support.

General licence restrictions, March 2009

These products are licensed for personal use on only one PC at a time. You may not rent or lease or resell products contained on this DVD or use them for public performance. Neither the suppliers nor the publisher will accept responsibility for any losses or damage resulting from use of this software, including any loss of profit, damage to equipment, interruption of business or data or any other damage direct or accidental.

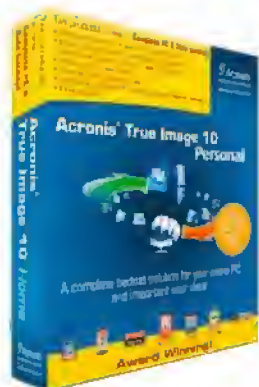
It is recommended that you back up any programs and data on your hard disk before installing this software.

PLEASE READ INSTALLATION AND SYSTEM REQUIREMENT INSTRUCTIONS CAREFULLY BEFORE USING.

The publisher, Incisive Media, has checked this DVD-Rom for known viruses at all stages of production, but you are advised to check all programs and discs accessed on your PC yourself before using them, with an up-to-date virus scanner.

No part of this DVD-Rom may be reproduced without prior permission of Incisive Media.





INFORMATION

System requirements Windows 2000 Professional SP4/XP/SP2 (32-bit/64-bit)/Vista (32/64-bit); 20MB hard disk space
Contact www.acronis.co.uk
Registration Obtain your free registration key at www.acronis.co.uk/mag/ati10pe

Acronis True Image 10 Personal

Protect your PC from hard disk disasters with this tool

If you're looking for the quickest possible PC backup then opt for a file-based tool. Tell it to back up the contents of your desktop, the documents, music and pictures folders, and the whole process will probably be complete within a few minutes.

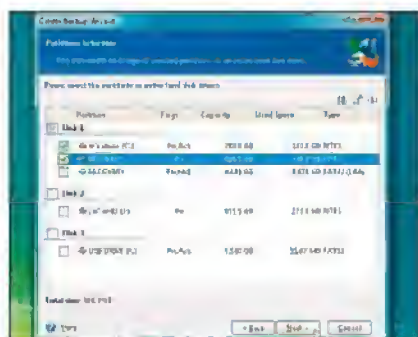
There's a reason why this kind of backup is so quick, of course. It doesn't save all the information you need – the emails, contacts, favourites, browser add-ons, fonts, drivers, application settings, usernames, passwords and everything else that makes your PC the system it is today. If your hard disk ever did crash, then you might spend weeks trying to get everything back in working order.

Use Acronis True Image 10 Personal as your backup tool and it's a very different story. The

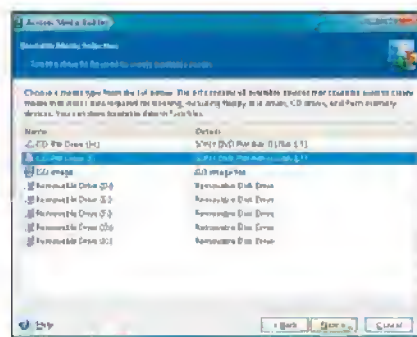
program creates an image of your system partition (or any other you specify), then copies it to a second drive. This is much easier to use, as there's no need to create complex filters or specify the files and folders you'd like to back up. And if your hard disk gets corrupted later, then recovery is very straightforward. Just boot from the rescue disc, point it at the backup and you'll be up and running just as fast as the data can be transferred.

Acronis True Image 10 Personal backups are even more convenient when you only need to restore individual files or folders. Click Tools > Explore Backup Archive, select your latest backup, and you'll see its contents in an Explorer window. Find the files you need and restoring them is easy as a quick drag and drop.

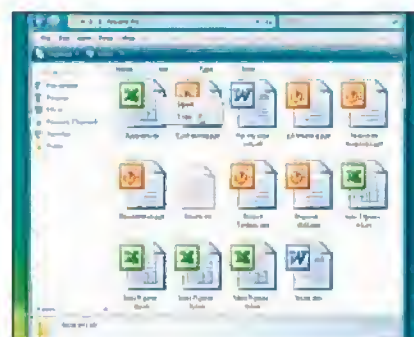
Keep your data safe with regular image backups



1 Launch Acronis True Image 10 Personal, click Backup and tell the program which partition you'd like to save. Point it at the disk where you'll be saving the backup, then select "Set the options manually" and set compression level to Maximum to reduce the backup size. Click Proceed to launch the backup.



2 You won't be able to restore your system partition (or the one with Acronis True Image Personal 10 installed) from the Windows version, but fortunately there's an easy solution. Click Create Bootable Rescue Media and the program will quickly create a bootable CD/DVD to get your system working again.



3 Restoring a complete backup will destroy your most recent work, so it's best kept as a last resort. If you only want to recover a few files then click Explore and Validate Backup Archives > Explore Backup Archive and choose your backup. You'll see its contents in an Explorer window, and can copy and paste them as usual.

UPGRADE OFFER

PC WORLD
The Computer Superstore

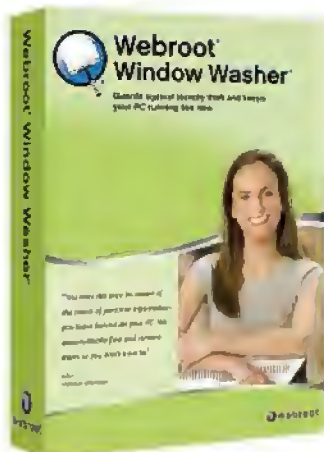
NEW FEATURES

Exclude files and folders • Incremental/differential backups • Easier backup scheduling • Full text search • Zip archive format supported • Windows Vista-style interface

£10 OFF ACRONIS TRUE IMAGE HOME 2009

The very latest version of Acronis True Image Home speeds up the backup process by adding the ability to exclude particular files and folders, as well as supporting incremental and differential backup types. Once set up you can leave the program to run its backups automatically. And archives can now be indexed by Windows Search, making it easy to find the file you need. You can get £10 off Acronis True Image 2009 from any PC World store. This offer is valid from 20 January 2009 until 9 April 2009. This offer cannot be used in conjunction with any other. Offer subject to availability. For more details, take this page to your local PC World store and give them offer code – 550082.





INFORMATION

System requirements Windows 2000/XP (32-bit)/ Vista (32-bit); 5MB hard disk space

Contact www.webroot.co.uk

Registration Not required

Webroot Window Washer 6.5

There's no easier way to maintain your PC's privacy

Add a firewall, spam blocker and anti-virus utility to a PC and you might think your data is secure – but it may not be. Anyone with physical access to your PC can still learn a great deal about your activities just from browsing your web history, the Windows recent items list, and all the other document histories maintained by just about every application you own. Unless, that is, you've protected yourself by installing a copy of Window Washer.

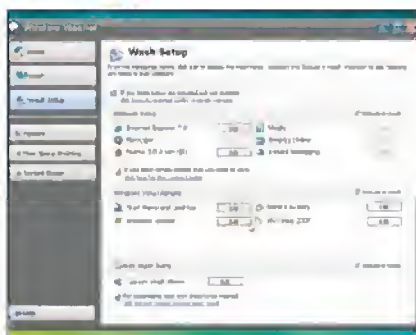
The program is easy to use. A couple of clicks is all it takes to wipe every trace of your activities in Windows, your browser and many other applications. Too drastic? Then you can fine tune its operation in many different ways. If you want to keep your IE history, but delete its temporary internet files and wipe all the cookies

apart from, say, Amazon's, then you can do exactly that with a quick configuration tweak. Set up the versatile Window Washer scheduler and you can have your unwanted web details wiped automatically at regular intervals.

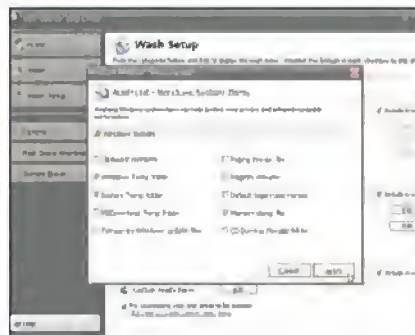
Deleting application histories in this way isn't for everyone, but Web Washer has another side that can be even more useful. It's able to securely overwrite the free space on your hard drive, again in just a couple of clicks, making it impossible for any intruder with an undelete tool to recover files you've erased.

And if you're planning to sell your PC or hard disk, then you really need the System Eraser. This creates a bootable floppy or CD you can use to wipe an entire hard drive, so the buyer won't be able to view your personal information.

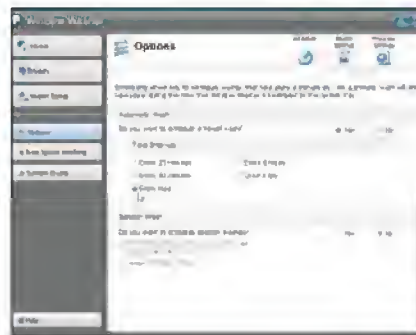
Clear all traces of your PC activities in a couple of clicks



1 Window Washer can clear hundreds of different history files and privacy-related Registry settings, freeing up hard disk space and recovering a little Ram. But are you sure it's configured the way you'd like? Launch the program, click Wash Setup and choose the Windows System Edit button to begin finding out.



2 By default Window Washer will delete your Windows temporary files – a good place to start – but it can wipe much more. Will you ever make use of the memory.dmp files created when your PC has a blue screen crash, for instance? If not, then check Memory Dump File, click Apply and you may recover 100MB or more of disk space.



3 Explore the other Edit options until you're positive Window Washer is set up to suit your needs. Then delete your activity traces at any time by clicking Wash My Computer Now. Or, for an even easier life, click Options > Schedule and set up the program to run automatically, just as often as you'd like.

UPGRADE OFFER

NEW FEATURES

- Two-way firewall
- Anti-virus tool
- Detect and remove spyware
- Automatic local backup
- 2GB online backup space
- Gamer mode

WEBROOT INTERNET SECURITY ESSENTIALS

If you like Window Washer, then you might also be interested in Webroot Internet Security Essentials. It's a powerful security suite that protects you from viruses, hackers and data theft, and includes automatic online and local backup tools to keep your files safe from harm. There's even a Gamer Mode to ensure you won't be hassled by pop-ups or alerts while gaming or watching movies. There will be a special offer from Webroot, where you can upgrade and save. See this offer and place your order at www.webroot.co.uk/getoffer



Ashampoo Burning Studio 2009

Burn audio or data discs quickly and easily

INFORMATION

System requirements Windows 2000/XP/Vista; 18MB hard disk space

Contact www.ashampoo.com

Registration Leave 'Get full version key' checked during installation to start the process of receiving your free registration key

Need to know Burning Studio 2009 does not support creation of DVD video discs

Ashampoo Burning Studio 2009 is a simple, yet powerful, suite that aims to get back to disc-burning basics. No bloat, no unnecessary features, no confusing options to get in your way – just the core functionality you need delivered through an easy-to-use wizard-based interface.

In just one click you can create a simple data disc; for instance, CD, DVD or Blu-ray. Drag and drop the files or folders you need onto the work area and the disc can be burned in two clicks.

It's just as easy to create an audio CD or video CD (VCD). Point and click, drag and drop your files, click Next > Write and watch as your disc is burned. The interface is virtually identical in every case, so once you've used one you'll feel at home with them all.

A handy design tool will help you create disc covers, labels and booklets, and there are plenty of bundled templates from which to choose.

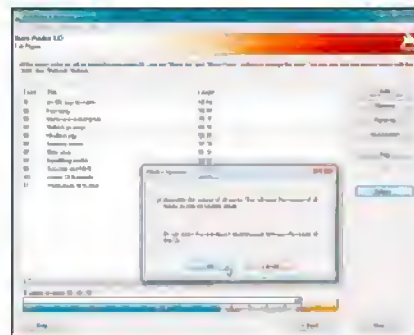
There's all the usual supporting functionality you'd expect from any disc-burning package: you can copy discs, erase rewriteable discs, rip audio CDs and work with several types of disc image (iso, Cue/Bin, ASHDISC).

Ashampoo has also thrown in a competent backup tool, which displays the contents of your hard drive in an Explorer-like tree, letting you check boxes to decide which files and folders you'd like to back up. Customisable filters can exclude files you don't need, then the backup can be saved to CD, DVD or Blu-ray disc, with the program automatically splitting the backup across multiple discs if it's too large.

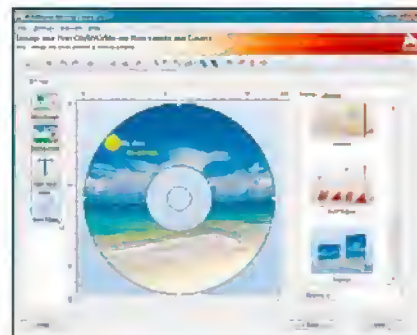
Three reasons why you need Ashampoo Burning Studio 2009



1 Some disc-burning packages weigh your PC down with unnecessary features that can tie up 1.5GB or more of hard disk space. By comparison, Ashampoo Burning Studio 2009 requires a minimal 18MB, thanks to a back to basics approach that ensures it's much easier to find the disc-burning function you need.



2 Most of the data and audio-burning functions use almost identical wizards that make them easy to use. Just drag and drop the files you need, click Next > Write and wait for your disc to be burned. But the program still has the features you need; for example, normalising audio tracks to ensure they all have similar volume.



3 Even though it's a simple and relatively small package, Ashampoo Burning Studio 2009 still finds room to squeeze in some very useful disc-related features. The backup tool is an excellent way to create quick ad-hoc backups of important data, for example, and the Print and Design function can produce quality disc labels in minutes.

READER OFFER

NEW FEATURES

Create animated DVD slideshows
Many transitions and zoom effects
Burn video DVDs
Quicktime video source support
Preview DVD movies with audio
Optimised for even better performance

SAVE 75% ON BURNING STUDIO 8

Upgrade to Ashampoo Burning Studio 8 and you'll gain features such as the ability to create animated DVD slideshows from your favourite photos. You can now create DVD movies from Quicktime source files (amongst many other supported formats), preview them with sound, then burn them to video DVDs. And the whole process has been optimised for even better performance and compatibility. The program would normally cost £34.99, but as a registered owner of Ashampoo Burning Studio 2009 you can upgrade for only £7.99 – a 75 per cent discount. Click Internet > Upgrade to Ashampoo Burning Studio 8 to place your order.

Iolo Antivirus



At first glance Iolo Antivirus looks much the same as any other anti-virus tool. There's real-time scanning of downloads, emails and any files you might open, for instance. Scheduled and on-demand scans will give your system a more thorough checkup, and regular updates ensure you're always equipped to deal with the latest threats. Take a closer look, though, and you begin to realise that Iolo Antivirus has some significant advantages over most competitors.

The program won't hog so many system resources that it'll interfere with your other PC activities, for instance. By default even scheduled

INFORMATION

System requirements Windows 98, ME, 2000, XP, Vista; 30MB hard disk space, Internet Explorer 6 or higher

Contact www.iolo.com

Registration Get your free serial code from www.iolo.com/vnuav

Need to know The program includes free updates for 12 months after the date of installation, and may be installed on up to three PCs

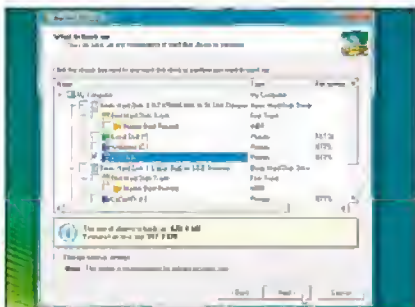
scans won't start until the PC has been idle for 10 minutes, and they'll stop if you return to do something else. Iolo hasn't forgotten that older PCs also need protection, either. While some other packages require at least 150MB of disk space and Windows XP, Iolo Antivirus is happy with 30MB and Windows 98.

The scanning engine uses a number of heuristic approaches to identify new threats from their behaviour alone. But the best part is hidden away in the small print of the Iolo Antivirus licence – you're able to install it on up to three PCs, and they'll all receive for updates for a 12 months from the date of installation.

READER OFFER SAVE 50% ON ANY IOLO PRODUCT

Iolo produces a wide range of PC security and maintenance tools. There's System Mechanic, which contains everything you need to speed up your PC; System Shield, a complete internet security suite; Search and Recover, an undelete tool; and Drive Scrubber, a program designed to securely wipe drives and ensure your data cannot be recovered. Prices start at £15, but you'll qualify for a further 50 per cent discount just by registering Iolo Antivirus. Check your registration email for the coupon code, and order at www.iolo.com.

Paragon Drive Backup 9 SE



INFORMATION

System requirements Windows XP (32/64-bit), Windows Vista (32-bit/64-bit); 110MB hard disk space

Contact www.paragon-software.com

Registration Click 'Get Free Serial' during installation

Paragon Drive Backup 9.0 Personal Special Edition is a backup tool that creates an image of any hard disk or partition with the absolute minimum of hassle. This image file may then be saved to a local or network drive, CD or DVD – whatever's most convenient.

The first backup will seem slow as you're saving the entire contents of your system. The program can build differential backups on future runs (images that contain only new or modified files) and that really speeds things up.

Paragon Drive Backup 9 Personal Special Edition has other uses, too. It's able to save just the master boot record (MBR) and first track of your hard drive, for instance, where your key

boot structures are stored. This will only take up a couple of megabytes, so you can squeeze it onto any handy CD. If the MBR gets corrupted later and your PC won't start, then boot from the program's rescue disc instead (see Tools > Recovery Media Builder), restore the backup and you'll be back in operation in minutes.

And you also get a range of useful hard drive-related tools covering everything from partition management (create, format, delete, hide and unhide the partition of your choice) to advanced low-level tweaks (change a partition serial number or ID). Paragon Drive Backup 9 Personal Special Edition really does offer something for everyone.

READER OFFER SAVE 20% ACROSS PARAGON RANGE

Move to Paragon Drive Backup 9.0 Personal and you'll be able to exclude some files and folders from your image, speeding up the backup process. A scheduler runs backups automatically and writes the image to a backup capsule (a special partition on your hard drive). This capsule can have its own Linux or Dos recovery environment, making it easy to restore your backup. Paragon Drive Backup 9.0 Personal normally costs £27, but register Paragon Drive Backup 9.0 PSE and you'll qualify for a 20 per cent discount, and any other program in the Paragon range. Check your registration email for details.



Paragon Drive Copy 9 Personal SE

Copy your entire hard disk or individual partitions to a new disk

INFORMATION

System requirements Windows 2000

Professional/ XP (32/64-bit)/ Vista (32/64-bit),
40MB hard disk space

Contact www.paragon-software.com

Registration Follow the instructions during the
setup process to receive your free product key,
or visit www.paragon-software.com/registration/dc9se.html

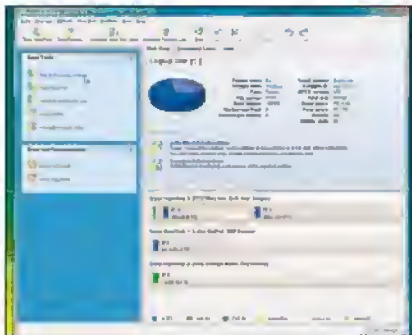
Old hard disks can be a performance bottleneck in some PCs, so upgrading to a faster model can deliver a significant speed boost, but setting it up manually can take forever. You'll have to install Windows on the new drive, then all your applications, download updates and transfer all your data. And that's before you move on to the really difficult bits, like trying to set up Windows and your apps to work as they did before.

You can avoid the hassle, though, with a little help from Paragon Drive Copy 9 Personal Special Edition. Just install the new drive, launch a Drive Copy wizard, and it'll copy your system in seconds. Once it's finished you can switch your hard disks, reboot and enjoy a revitalised, faster new PC.

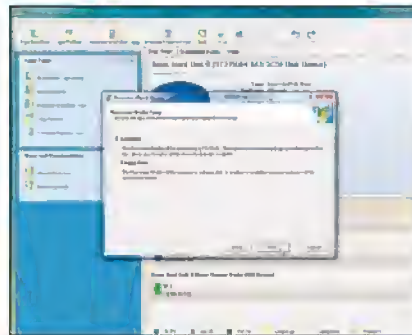
Of course life isn't always that straightforward. One of your hard disks might have a technical problem of some kind, or you might not want to copy the entire disk. Paragon Drive Copy 9 Personal Special Edition can help there, too. The program provides tools to test drives, check file system integrity or scan for drive surface problems, for instance. You can create partitions on the new drive, if you'd like it to have a different structure, then copy selected partitions from your current system.

You'll soon have your new disk up and running, but the program's usefulness doesn't end there. You can use it to schedule disk or partition copies, making it a handy backup tool. You can even create a bootable rescue CD – a potential lifesaver if your PC won't start.

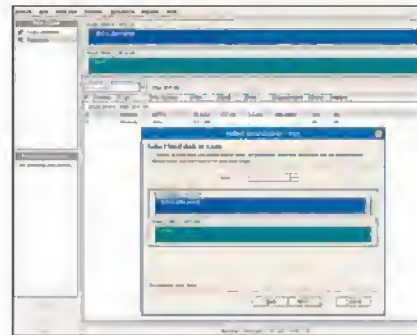
How to make an exact copy of your hard disk quickly



1 If you just need a simple, direct copy of your system drive, then click One Button Copy Wizard. Tell the program which drive you're copying, and where you want the copy to be written, accept the default copy settings (they're fine, though check the Help file if you need to know more), then wait as your system is cloned.



2 You can carry out more complex actions from the program, too, such as scan for file system errors or copy selected partitions. But these may require a reboot. It's probably easier to perform these advanced tasks from the standalone version of Drive Copy, instead – grab a blank CD and click Tools > Recovery Media Builder to create it.



3 Reboot your system from the CD to launch the standalone version of Drive Copy, which will run far more smoothly now there are no more background processes using your hard disk. Right-click a drive to perform advanced tasks such as managing your partitions, or click the Wizards menu to create the duplicate drive you need.

READER OFFER

NEW FEATURES

Powerful PC backup
Professional drive partitioning
Comprehensive drive defragmentation
Securely wipe hard drives
All-in-one hard drive management
Read NTFS drives on a Mac

SAVE 20% ACROSS THE PARAGON RANGE

Everyone who registers their copy of Paragon Drive Copy 9 Personal Special Edition will receive a coupon code offering a 20 per cent discount off any other product in the Paragon range. There are tools to defragment your hard drive, recover deleted files, encrypt confidential data, create and manage hard drive partitions, and back up your system. Visit www.paragon-software.com to find out more, but hurry – your coupon code will expire seven days after you register.



Barry Shilliday has worked with computers for almost two decades. By day, he is a Linux and Unix consultant, but in his free time he prefers to travel the world – and snap it with his camera.

→ Comments welcome on the Linux/Unix column.
Email linux@pcw.co.uk
Please do not send unsolicited file attachments.

Disks and filesystems

Find out how different the Unix way of disk handling is from the Windows approach

If you are not used to the Unix way of accessing disk drives, things may seem a little complicated at first, especially if you are coming from a Windows background. With the Microsoft operating system, partitions on a disk are assigned an arbitrary letter, starting with 'C:' for the system disk. Each partition across however many disks or CDs (or even network 'drives') are available is accessed in this way. However, with Linux, and all Unix derivatives, storage devices are mounted onto a single virtual filesystem, known as the root filesystem, instead.

The best way to illustrate the difference is to imagine a typical disk that has been set up for dual-booting between Windows and Linux. You can see a graphical representation of this disk, as shown in the Ubuntu 8.10 live installer (see screen 1).

The disk has two primary partitions and two logical ones (see the box on the next page for more information). The first primary partition is an NTFS-formatted Windows XP installation. The second primary partition is formatted with Linux's ext3, and contains a copy of Ubuntu.

The first logical partition is for various data files to be accessed both from Windows and Linux, and is formatted with NTFS; the final logical partition is swap space for the Linux installation. The table on the next page shows how Windows and Linux may refer to each partition on this disk.

While Windows assigns a letter to filesystems it can understand (such as NTFS and the File Allocation Table, or Fat), it ignores any others completely.

Linux on the other hand uses device names based on the hardware layout itself. The first disk drive (typically the boot drive) is given the name sda, and each partition is



assigned a fixed ascending number. The root partition (the second primary partition, in this example) is mounted as the top-level directory, and any other drives are mounted below it.

As a result, all files that you can access under Linux, whether they're on an internal disk or a remote server, are manipulated under one filesystem. In the example above, entering the directory /media/data would take you from the Linux partition to the Windows data drive on /dev/sda5.

This approach offers some flexibility. If you decided to add a drive to the

Typical disk layout on a dual-boot system

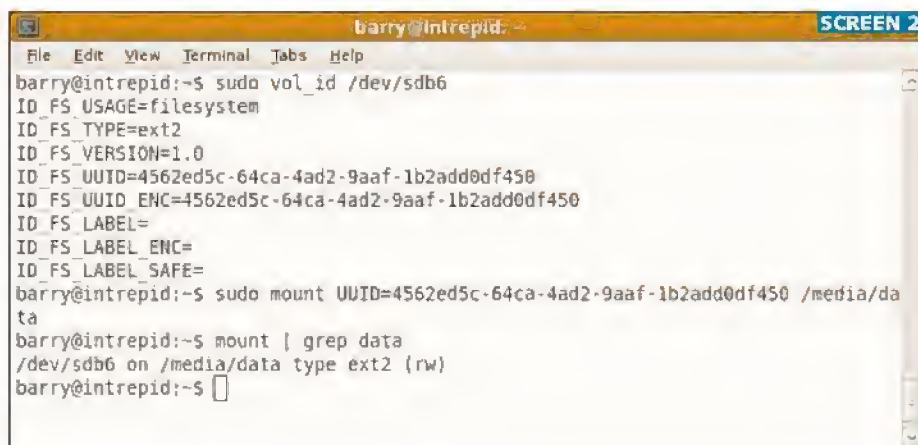
Access disks using their UUID numbers or labels

system to replace the data partition, it would be a simple task to switch /media/data to point to the new storage space. Similarly, adding extra drives or network shares will not change the layout, so sda5 will remain sda5. Drives can be added at any time without disrupting the structure of the filesystem; you could add a new drive on /media/video, without it affecting anything else.

However, issues over device names can still occur, especially with plug-in storage. For example, if your PC has a single internal hard disk, and you plug in an external USB drive, then the USB drive will be named 'sdb'. If you then plug an iPod into another USB port, it will be assigned 'sdc'.

But what happens if you plug them in the other way round? The device names will be reversed, as Linux assigns device names according to the order in which it finds them.

So while the system works well for fixed internal drives, it is less predictable when storage availability becomes variable. Fortunately, access to plug-in devices is handled very well and transparently by Linux desktops, and is rarely noticed by users.



UUIDs

The mechanism of accessing storage devices by the hardware device name has worked well for a long time, but its inadequacies have been addressed recently by the move to Universally Unique Identifiers (UUIDs).

A UUID is a long number, essentially a numerical fingerprint, that is allocated to each filesystem. Rather than mount a partition based on its device name, Linux can now mount it based on its UUID instead.

The Linux kernel scans all the filesystems across all available drives, and keeps a record of the UUID of each one, internally linking it to the associated device name. This means that no matter what device name a partition has, its filesystem can always be located by the same identifier, even if the filesystem has been cloned and moved to another hard drive altogether.

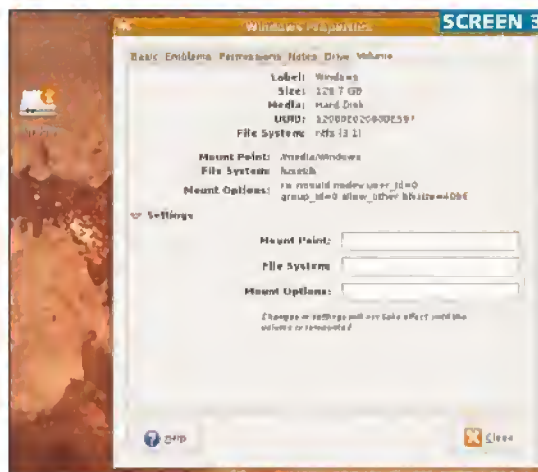
This method is especially useful for booting Linux systems. The Grub bootloader recognises these UUIDs, and can locate and boot any filesystem available, without the complication of having to know which partition, or even which disk, it is located on.

If you install a copy of Ubuntu onto an external drive, so long as that drive is plugged in when the computer is switched on (and the Bios can recognise it), the bootloader can start up the operating system without being configured to look for a specific drive. Rather than being configured to boot, say, the third partition on the second drive, it can be configured just to boot the relevant filesystem by its identifier.

The main drawback of using unique identifiers as opposed to device names is when the partition is reformatted. If you decide to wipe a partition, even if you use the same kind of filesystem as before, the unique identifier will change, although the device name will remain the same.

Again, this is rarely a problem, and also a rare occurrence itself in practice. Where filesystems are automatically

External drives are handled cleanly and transparently by the Gnome desktop. The advanced Volume tab shows technical details



mounted in the /etc/fstab file, you can update the UUIDs easily enough to the new codes. Running the command 'vol_id' determines a partition's UUID:

```
$ sudo vol_id /dev/sda2
```

A command like this will return the UUID on the partition provided. The identifier follows the tag 'ID_FS_UUID' in the command output (see screen 2). This can then be used in the mount command, followed by 'UUID=', either with the mount command directly, or in the /etc/fstab file.

Some distributions of Linux will configure existing partitions from any

PC partitions explained

The way in which PCs boot hasn't really changed since the days of the earliest IBM PCs. The computer's Bios initialises the hardware when it is switched on and then starts up the operating system from a boot disk.

The Bios expects to find the boot disk partitioned in the traditional way, using a master boot record, or MBR. The MBR is a far from flexible tool: it allows for a maximum of four partitions (known as primary partitions).

One of these primary partitions can be treated as an 'extended' partition, which can be further split

into several 'logical' partitions.

There are further limitations. The standard MBR bootloader can only start up an operating system installed on a primary partition, which means that Windows cannot be installed onto a logical partition.

There is no such restriction with Linux, as the standard bootloader, Grub, can start Linux from either partition type. As the layout of the MBR is fixed, the first logical partition always begins at position 5 in Linux, even if fewer than four primary partitions are actually created.

other copies of Linux present on the drive at the time of installation, and so it may be necessary to adjust the identifiers if the other distributions are re-installed or removed.

Labels

Labels offer a simpler alternative to UUIDs, but work in almost exactly the same way. Supported filesystems, such as NTFS and ext3, can be given an easy-to-remember label. For NTFS filesystems, the label is what Windows uses to refer to the drive alongside its drive letter, and can be changed from within Windows itself, or by using the 'ntfslabel' command in Linux.

For ext3 filesystems, change the label with the 'e2label' command:

```
$ sudo e2label /dev/sda2 Ubuntu
```

This command changes the label of the filesystem on /dev/sda2 to 'Ubuntu'. It can then be used in the /etc/fstab file or with the mount command in the same way as UUIDs by using 'LABEL=' instead.

The big advantage of labels is that they are easy to remember and can offer more immediate meaning than a long, obscure number. In the Gnome desktop, partitions are also listed by their label, which can be useful for accessing other drives (see screen 3).

The disadvantages are that labels only work on supported filesystems (not swap space, for example) and are not unique, so using labels only works if there is no duplication, such as two partitions being labelled 'data'. Both UUIDs and labels can be used together, with the former more useful for configuration files, and the latter for information. **PCW**

Partition naming on a typical dual-boot disk

PARTITION AND TYPE	WINDOWS	LINUX DEVICE	MOUNT POINT
1st Primary	C:	sda1	/media/winxp
2nd Primary	N/A	sda2	/
3rd Primary	N/A	sda3	N/A
4th Primary	N/A	sda4	N/A
1st Logical	D:	sda5	/media/data
2nd Logical	N/A	sda6	(swap)



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→ Comments welcome on the Digital Imaging & video column. Email digitalimaging@pcw.co.uk Please do not send unsolicited file attachments.

When Flash goes crash

What to do if your camera's memory card lets you down

Every so often the Hands On mailbox receives a desperate request from a reader who has just lost all their holiday, wedding or other once-in-a-lifetime event photos and is hoping against hope that there may be some way of retrieving them.

If you find yourself in this situation right now, you're in luck (if you can call it that), because this month's column is all about retrieving images from reformatted, damaged and corrupt memory cards. If all your photos are safe and sound and backed up in three different locations, give yourself a smug pat on the back and put this issue somewhere safe: you never know when it's going to happen to you.

Prevention, as the well-worn phrase has it, is better than cure, and there are a few things you can do to ensure that catastrophe is less likely to erase your precious memories before you get them off your media cards.

The first thing to do is to copy the images onto your hard drive and back them up at the earliest opportunity. I'm always astonished when friends show me photos on their digital cameras that go back months. Larger 4GB and 8GB cards are useful if you shoot a lot of images, but using them as an excuse to put off transferring files to your PC is asking for trouble.

Use a card reader to transfer your files to your PC rather than attaching the camera itself, particularly if you're experiencing problems with the card. And once you've safely transferred and backed up your photos, format the card in the camera before using it again.

What can go wrong?

Judging by the Hands On mailbox, forum posts and the testimonials on recovery software and services websites, the most common reason for



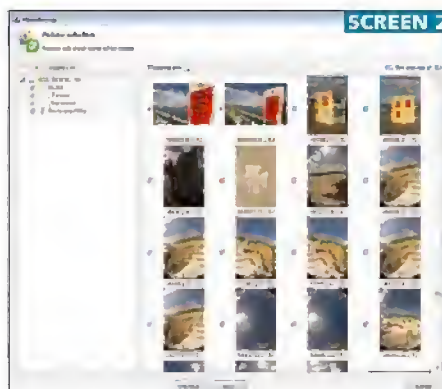
losing digital images is accidental erasure or formatting.

Sometimes your camera can be responsible without any intervention on your part. Batteries may fail during a write operation (after you press the shutter but before the images have finished writing to the card, for example). And occasionally weird stuff happens for no apparent reason, such as your camera suddenly informing you that there are no images on a card when you've just spent the last half hour shooting.

If you take the advice offered earlier, then if you do accidentally format a card full of images you'll only have lost your most recent photo session. Compact Flash and SD cards

You tell Image Rescue what camera you have, and it will hunt down the missing files

Easy to use with good results, but Photo Rescue doesn't let you search for file types



the files shown as available for writing.

The first rule when things go wrong is to stop using the card immediately and remove it from the camera. There's a good chance that the image files are still on the card, intact, and that you'll be able to recover them using inexpensive file recovery software.

On test

I've carried out limited testing using five inexpensive data recovery applications. The most costly (assuming sterling hasn't yet reached parity with the dollar) is £28.15 and most are available as trial downloads. In many cases the trial will tell you whether the program can find recoverable files on the card, and you can pay for the full version of the software to recover them.

For each of the applications I attempted to recover photos written to three cards using two different cameras. The cameras were a Canon Eos 20D SLR and a Nikon Coolpix S200 compact. The Eos 20D was used to write 200 images to a 2GB Sandisk Ultra II CF card, and an 8GB Lexar Professional 133x CF card. The Coolpix was used to record 100 images on a Sandisk 1GB SD card.

Because of the proprietary nature of camera Raw files, it can be more

difficult for recovery software to identify and rescue Rawfiles than JPEGs or other published image file formats. Of the files shot with the 20D to the two Compact Flash cards, 100 were Raw .cr2 files and 100 were JPEGs. All those shot on the Coolpix were JPEGs.

After the photos were taken, the card

was formatted in the camera before being transferred to the card reader to attempt recovery using each of the applications. The card reader used was the same in each case: Lexar's Professional UltraDMA dual-slot Compact Flash and SD card reader.

The results

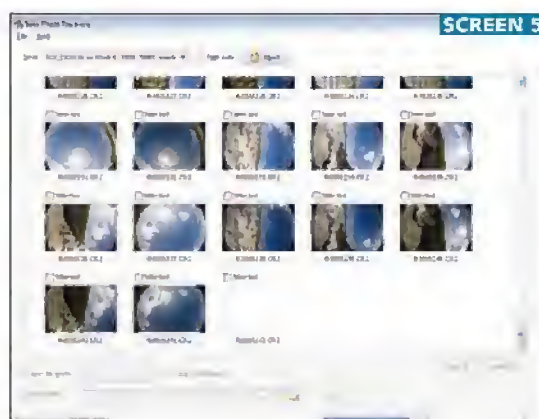
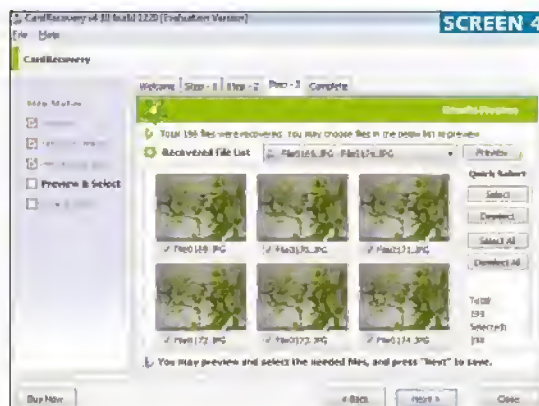
The results can be summed up fairly simply: every application had nearly 100 per cent success at recovery of both Raw and JPEG files. Most were able to retrieve images from earlier sessions as well, but these haven't been included in the results.

As important as an application's ability to recover lost data is its ease of use. What follows is a brief explanation of how each of the applications works and how easy it was to recover the lost images on the cards. Since you're only likely to need to do this rarely, the ease with which you can recover your lost photos using unfamiliar software is an important factor.

Image Rescue 3

Image Rescue 3 takes you step by step through the image recovery process using a wizard-based panel. You can select your camera manufacturer and tell the software what kind of files you're trying to recover: images, video or audio, and the file type. For Raw formats it provides the options for your camera manufacturer, so if you select Canon, for example, you get CR2, CRW, JPG and TIF (see screen 1).

The software then scans the card and tells you what it has found. It took around half an hour to scan the 8GB Lexar Compact Flash card; obviously, smaller cards won't take so long. It's also faster if you search for fewer file formats; I elected to find all the



Top: Card Recovery is the most expensive, but also the most efficient

Bottom: Easy Photo Recovery is extremely simple

Below: There's no wizard interface, but Photo Rescue doesn't take too long to get used to

available still image file formats.

Image Rescue 3 did a good job, recovering all but one of the files. It mistook the Raw.cr2 files for TIFFs and saved them with a .tif extension, but they still opened as Raw files in Adobe Camera Raw.

Photo Rescue Wizard 3.0

Photo Rescue offers recovery software in several stages: Wizard, Expert and Advanced. I tested the Wizard version, which turned out to be extremely easy to use. The quick recovery option scans your card and presents you with thumbnails of all the recoverable images it can find.

Unlike Image Rescue, Photo Rescue doesn't give the option to search for specific file types (see screen 2). But it did recover all the files with filenames and correct extensions. The demo version lets you do everything bar save recovered files to disk, for which you need to pay \$29.99 for a licence key.

Photo Recovery 3.5

Unlike Image Rescue and Photo Rescue, Photo Recovery isn't wizard-driven and the interface is a little more involved, though not overly difficult (see screen 3). You have to select your card reader from a drive list and there's a long,

long list of file types of all kinds to select from, not just media files. To make things easier you can select preset groups, such as 'Canon'. I went with the default All Cameras option.

Photo Recovery did a great job of recovering both the Raw and JPEG images on all the cards. It seemed to have a problem with handling the display of the images, though, and everything slowed to a crawl, making it difficult even to scroll through the list of recovered images. This was at least in part due to the processing requirements of displaying previews for Raw files and is something the other applications suffered from as well, albeit to a lesser extent.

Card Recovery 4.10

Card Recovery is the most expensive of the utilities tested, but it is one of the easiest to use and most efficient (see screen 4). The step-by-step wizard asks you to select the drive letter for the card reader and choosing your camera brand and the file types you want to recover. You don't need to specify suffixes: just check the box for photos, video and/or sound.

The next step starts the scan and, when that's complete, you save the recovered files to disk. As with most of the other utilities, you can scan your card using the demo download to see what's recoverable. If you find what you're looking for, pay the fee to enable the save function: no gain, no pain, so to speak.

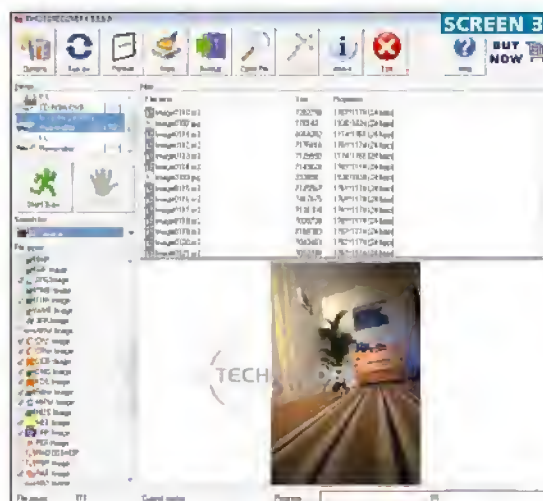
One of the things I like about Card Recovery is that you can stop the scan part-way once you've found the files you want and move on to the saving stage. This is particularly useful for large-capacity cards.

On the 8GB Lexar card the utility had found everything it was going to find in the first few minutes. I let the scan run to the end, just to be sure, but had I stopped it, I could have saved myself around 20 minutes.

Easy Photo Recovery 2.4

It doesn't get much simpler than this: you select the drive letter, then click Scan (see screen 5). There's a Fast Scan option that I didn't bother with on the grounds that saving pictures, not time, is likely to be most users' priority.

In the event, the standard scan is pretty fast: it's the image processing and preview generation that takes time. The trial version lets you save low-resolution versions of recovered stills and the first second of video clips. **PCW**





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→ Comments welcome on the Word processing column.
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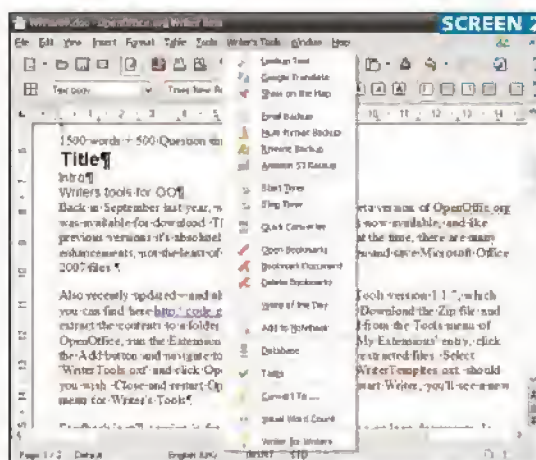
Writer's tools

Give your word processing a boost with some of these suggestions

Back in September 2008, we mentioned that a new beta version of Openoffice.org was available for download. The release version 3.0 is now available, and like previous versions it's free. As we mentioned at the time, there are many enhancements, not least of which is the ability to open and save Microsoft Office 2007 files.

Also recently updated – and free – is Dmitri Popov's Writer's Tools version 1.1.7, which you can find at <http://code.google.com/p/writertools/>. Installing it is something of a fiddle, but worth the effort. Download the zip file and extract the contents to a folder. Start Openoffice, and from the Tools menu run the Extension Manager. Click the Add button (in previous versions you need to select 'My Extensions' first) and navigate to the folder containing the extracted files. Select 'WriterTools.oxt' and click Open (see screen 1). You can also add the WriterTemplates.oxt, should you wish. To use these features you'll need to register the WriterDB database as an Openoffice.org data source. Go to Tools, Options, expand the Openoffice.org Base branch, select Databases and click New. Browse to the WriterDB.odb file that comes with the Writer's Tools package and OK out of both dialogues.

Close and restart Openoffice, and when you start Writer, you'll see a



A menu full of goodies

new menu for Writer's Tools (see screen 2). To use some of the tools, such as Lookup, you'll need to provide the path to your default web browser the first time you use them. Having done this you'll find you can highlight a word or phrase, click Lookup and have a choice of nine sources, ranging from Wikipedia to a dictionary of confusing words. Other built-in lookup tools include translating words or phrases into other languages via Google Translate, and finding a place on Google maps.

The next section has a variety of options for backing up, including Amazon Simple Storage Service (Linux only), a remote FTP site or a Gmail address. There's also a multifunction backup tool that creates a ZIP file in the current folder with versions of the document in text, RTF and DOC format.

A Quick Converter lets you calculate feet to metres and Celsius to Fahrenheit and, as screen 3 shows, there's a rather bizarre word of the day feature. There's also a timer, should you want to monitor your performance, or perhaps log editing time for billing, and a rather fine

visual word count that shows a progress bar as you struggle towards your target (see screen 4). A Notebook tool lets you add snippets of text to a database, rather like a multiple clipboard.

The bookmarks feature, to put it mildly, is confusing. Ambiguity is a frequent hazard in open-source projects, and this is not the same as the in-document bookmarks found in the Insert menu. There's also another different add-on called Bookmarks for adding commands to menus. What Bookmarks seems to do is add shortcuts to other documents to a list independent of the text. Finally, there's a link to Lulu.com, where you can buy a printed manual for Openoffice Writer for £9.85.

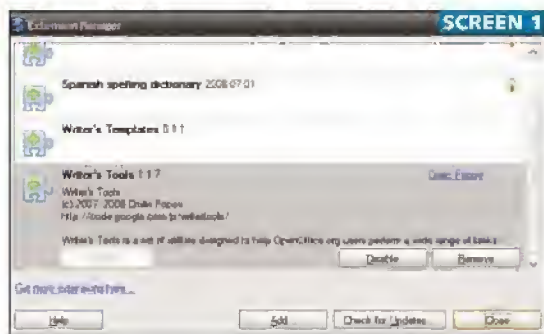
More bookmarks

Getting back to the conventional use of the word 'bookmarks' in word processing, last month we looked at the basics of Word's bookmarks feature and promised you some more ambitious tricks. Starting off with something simple, let's say you've created a letter template with a heading, automatic date insertion and other conveniences. To round things off, you'd like the template to open at the salutation, so you can immediately start typing after 'Dear' without having to move the insertion point. This is easily done. Open the template, insert a bookmark where you want to start typing and give it a name, such as 'starthere'. Now create a new Autonew macro as follows:

```
Sub Autonew()  
ActiveDocument.Bookmarks <  
("starthere").Select  
End Sub
```

(Key: < code string continues)

If you already have an Autonew macro for that template, just add the second line, placing it immediately





A pearl of wisdom from Writer's Tools

above the existing End Sub line. Save and close the template. Each time you create a new document based on the template you'll find the insertion point is right where you want it.

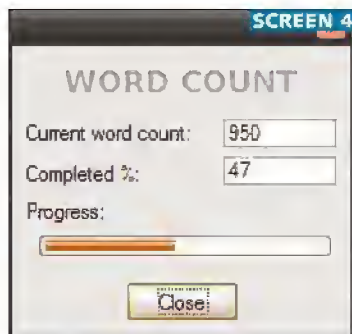
You may want to sequentially number every document based on a particular template. One obvious example is producing invoices. There are several ways of doing this, but the simplest is to use an Autotext entry in the template. So open the template, type 'Invoice number:' somewhere suitable, followed by the number you want to start from. Highlight the latter, then Insert, Autotext, New. Give it a name, such as 'currentnumber' (don't worry, you won't ever have to type it out), and with the number still selected create another bookmark, named 'invnum'.

Now add the following code to the Autotext macro:

```
lastnum$ = ActiveDocument.
AttachedTemplate.AutoText
Entries("currentnumber")
currnum$ = Str(Val(lastnum$)
+ 1)
ActiveDocument.Attached
Template.AutoTextEntries
("currentnumber").Value =
currnum$
ActiveDocument.Bookmarks
("invnum").Select
ActiveDocument.Attached
Template.AutoTextEntries
("currentnumber").Insert
Where:=Selection.Range
ActiveDocument.Attached
Template.Save
```

Taking this line by line, this first reads the value of the 'currentnumber' Autotext entry and assigns it to the variable 'lastnum\$'. It then increments the value of this by one, and stores the result as 'currnum\$'. The line that follows updates the Autotext entry to the incremented number, and the line after that selects the 'invnum' bookmark. The penultimate line inserts the updated Autotext entry at the bookmark, and finally the macro saves the template file to include the updated Autotext entry.

Another thing you might want to do with an invoice is automatically insert a 'pay by' date based on the invoice date. Let's say you want to



Getting there – the Openoffice visual word count

give your customers 30 days to pay up. So, at an appropriate point in the template, type 'This invoice is due for payment by', followed by a bookmark named 'payby'. Then create the following macro code.

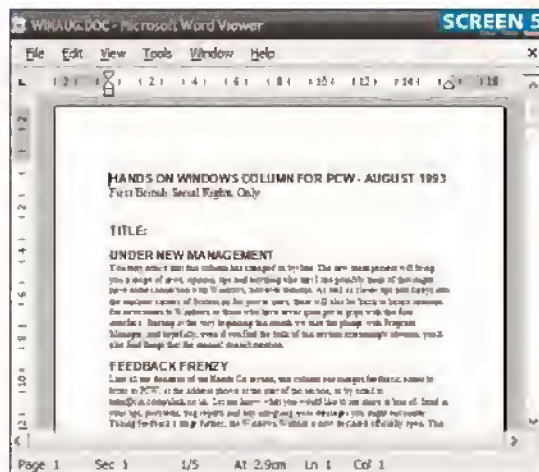
```
ActiveDocument.Bookmarks
("payby").Select
Selection.TypeText Text:=
=Format(Date + 30, "d mmm
yyyy")
```

This will insert a date 30 days in the future. It inserts it as plain text so it won't change when fields are updated.

Look, don't touch

The Microsoft Word Viewer is a free download from Microsoft, and you can find it at <http://tinyurl.com/2c3xsk>. As the name suggests, it lets you view Word

No Word?
No problem



Alan Fagg's Indexing toolbar

files without having Word installed. You can download the Compatibility Pack for Word, Excel and Powerpoint 2007, also free, from <http://tinyurl.com/ykums3>, and with both installed you'll be able to view Word 2007 DOCX files as well as the earlier DOC files. You'll also be able to view Microsoft Works and Wordperfect documents.

Whereas this is obviously useful for someone who doesn't have any version of Microsoft Word or Office installed, but would like to be able to read and print documents, it has other uses. If you open an old Word for Windows or Dos document you may find that Word changes all the dates therein to the current date. This can make it rather difficult to ascertain when, say, a letter was first written. What is happening here is that originally a 'today' date field was inserted instead of a static date. It's not so easy to make that mistake in later versions of Word – you can either insert a Create Date field, which returns the date and time the document was first saved, or insert a date without the 'Update Automatically' option selected. If you don't save the file, then the original dates are there somewhere, and it's possible to lock the fields so this doesn't happen. The Word viewer does not do this updating, so it's a much less troublesome way of reading old files (see screen 5).

Easier indexing

Feedback is still coming in from our four-month marathon on long documents. In January's column we wrapped up the series with a look at indexing. This prompted a mail from Alan Fagg. Alan writes user guides and manuals for bespoke software for the oil and gas industries, and remarks that indexing in Word is a pain. Over the years he has written various macros to make this simpler, such as stepping through indexed words from the index itself, adding sub-entries from a dropdown list of main entries, deleting words from the index and so on. He has put all of these together into a set with a toolbar that he sells 'for a pittance' as shareware. We've tried this out and it is rather good (see screen 6). You can try before you buy at www.flair-consultants.com/indexing_tools.html. This fully functional version comes with – in Alan's own words – 'an annoying pop-up window', but you can purchase a version free from pop-ups for a modest £9.99. **OPCW**



Stephen Wells is a freelance journalist and a regular contributor to computer magazines. He's been writing PCW's Spreadsheets column for over 10 years.

→ Comments welcome on the Spreadsheets column.
Email spreadsheets@pcw.co.uk
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Groovy graphs in Excel

How to spice up your spreadsheets with impressive-looking graphs

Emima Lynch contacted us to say: "It's a pity Excel doesn't offer a thermometer chart as we'd like to be able print one for our club notice board showing our progress in collecting £1,000 for charity."

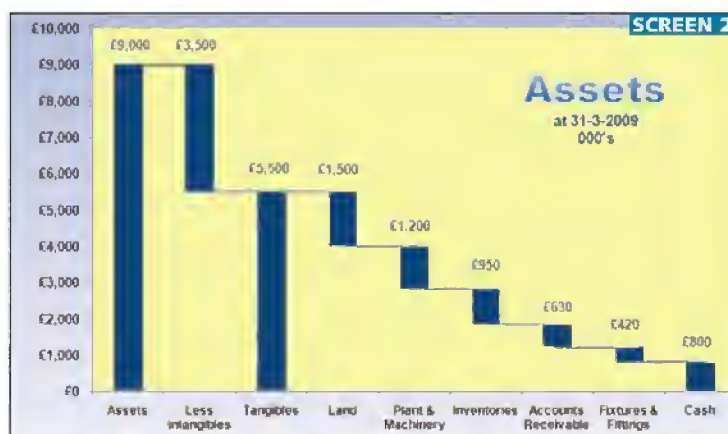
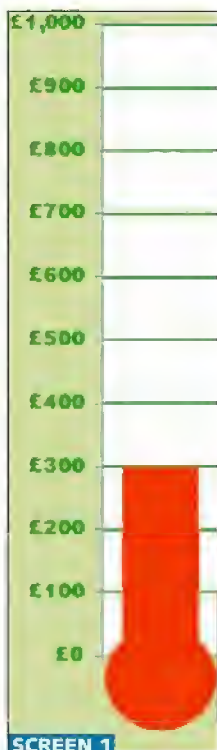
No problem, Emma. It's easy to create one. On a clean worksheet enter 900 in cell A1. Format the cell as Currency, no decimals. Click cell A1 and press the function key, F11. You'll now have a simple single-column chart, on a new sheet called Chart1, with £0 to £1,000 as the y-axis, the vertical axis on the left-hand side. This axis will automatically be stepped in £100s: £100, £200, and so on.

Right-click on the Series1 box on the right-hand side and choose Delete. Right-click on the y-axis and change the font, its size, and to bold. Right-click on the y-axis again, select Format Axis and change the stepping units if you wish – you could change it to £50, for example. Also, although the y-axis options automatically go from 0 to 1,000, it's important to re-enter these as Fixed Options or they will change when you enter values less than 900 and mess everything up.

Right-click on the x-axis, choose Format Axis and the set Axis labels to None. To reduce the width of the column to look more like a thermometer, right-click on it. Select Format Data Series and change Gap Width to 60. This expands the column to almost fill the Chart Area. From the centre-bottom of the column raise it up so there is a good space between the bottom of the Plot Area and the bottom of the Chart Area. If you click at the centre-right of the Chart Area you can drag to the left and reduce the column width.

A different way to show a breakdown of a financial total

Create a moveable thermometer chart in Excel



Insert an oval shape at the bottom of the thermometer while holding down the Shift key. This produces a circle you can drag into the correct position. Right-click on the column and change the colour to a dark orange. Repeat in the circle shape. Also, right-click in the circle and choose Format Shape and select No Line.

You can now return to cell A1 Sheet1, change the value to say 300, to see the result as in screen 1. And that solves your dilemma, Emma.

A concertina

While on the subject, let's look at some other unusual chart formats. For instance, there are many ways to chart the constituent parts of a total but a concertina chart (see screen 2), works particularly well if you're creating a slideshow. You can display the parts progressively, slide by slide. The example shows a breakdown of a company's £9m in assets. £3.5m are in intangibles like its trademarks and patents. The rest are split between land, plant and machinery, inventories, accounts receivable, fixtures and fittings, and cash.

The labels to run along the horizontal axis can be entered in A2:A10 with their equivalent amounts in C2:C10. To create the chart some parts of the columns need to be blank and some parts displayed. Zero is entered in cells B2, B4 and B10. B2 has `=C2-C3`, B5 has `=C4-C5`, B6 has `=B5-C6`. Drag this formula down to B9.

Highlight D2:F10 and create a stacked column chart. Right-click on the legend displayed at the right of the chart and choose Delete.

Right-click on the lower part of the Less intangibles column. Then select Format Data Series, Fill, No fill. This clears all the lower parts of six of the nine columns. Now right-click at the top of one of the columns and choose, Add Data Labels. Drag each label to a position just above its column.

Select Insert, Shapes, Line. Hold down the Shift key and you can draw horizontal lines and drag them into position between the columns.

How you dress up the chart is up to you. In the example (see screen 2), the title was produced using Wordart. Finally, right-click on each axis, the chart area and the plot area, and format in your chosen style.

A double pie

Another way of showing the same information is a pie of pie chart. It makes it easier if you rearrange the data. In the range A1:A7 enter Fixtures & Fittings, Accounts Receivable, Cash, Inventories, Plant & Machinery, Land, and Intangibles. For each category, enter in B1:B7 the same values as used in the concertina chart.

Highlight the range A1:B7 and choose Insert, Chart, Pie of Pie. Drag each side of the chart out to increase the overall size. Right-click on the legend and choose Delete. Right-click on the large pie and click Add Data Labels. Right-click again and select Format Data Series. Under Series Options, select Split Series by Value. Then enter 3500 in the 'Second plot contains all values less than' field.

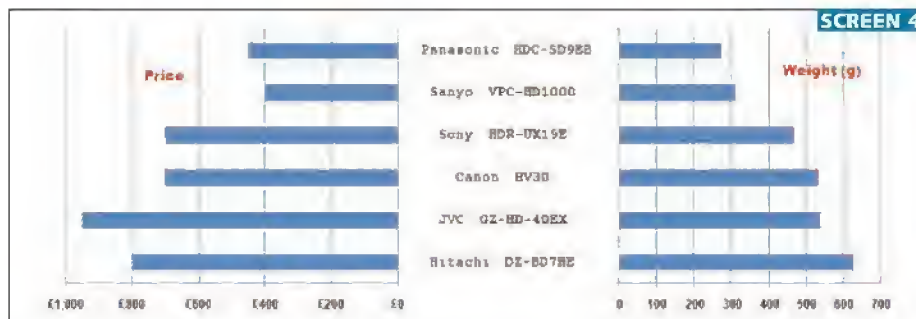
Right-click on the large pie again and click Format Data Labels. Under Label Contains, check the boxes for Category Name, Value, and Show Leader Lines. Choose Number, Currency with no decimal places. For label position select Outside End.

Right-click on a label and choose Font. The example shown here uses Ariel Black, 10pt, Regular. Now drag the labels so they are in more suitable positions. Click on the label that by default reads Other and edit it to read Tangibles.

Finally, add a Wordart title as before and the result should look like screen 3.

A comparison chart

Is there any correlation between the price of high-definition camcorders and their weight? Here's a neat chart to make a comparison (see screen 4).



Convert a chart to a graphic

If you want to save an Excel chart as a graphic for use in a web page, in a slide or other document, it's quite easy. Many people save it to the Clipboard and then paste it into a graphics program, but it's faster to export an Excel chart as a graphics file.

Select the chart and press Alt & F11 to open the VBA for Excel editor. Press Ctrl & G to open the Immediate window and type:

```
ActiveChart.Export "C:\Chart1.xls"
```

JPG", "JPG"

(Key: < code string continues)

Press Enter and, instead of Chart 1, type whatever name you wish to use for the graphic file. Instead of both instances of JPG you can enter the extensions of any of the other graphics filters available in Microsoft Office, such as BMP or GIF. Press Alt & F11 again to return to your spreadsheet.

The new file will be in the C:\Documents and Settings\User\My Documents directory.

Compare camcorders for weight and price

range A2:B7 and press F11. Right-click on the Chart Area and choose Change Chart Type. Choose the first Bar type, Clustered Bar. Right-click on the Legend and click Delete.

Right-click on the left of the Chart Area and select Format Chart Area. Then select Border Colour, No Line. Hold down Shift and, from a corner of the chart, reduce its size. Then click outside the chart.

Now start to drag the chart to the right and then hold down Shift & Ctrl as you continue the movement. This is fiddly, but means you'll get two copies of the chart on the screen.

On the new copy of the chart, to the left of the screen, right-click on the vertical axis (the names of the camcorders) and click Delete. Right-click on this chart, choose Select Data and highlight the data range C2:C7. This will chart the prices on the left against the weights on the right.

Right-click the horizontal axis on the left chart, click Format Axis and then check the box Values in Reverse Order. This flips the bars so they run from the right and not the left. Hold down Shift so the chart only moves in one direction at once, then slide the copy of the chart up to the original so the names of the camcorders are between the two halves of the comparison chart.

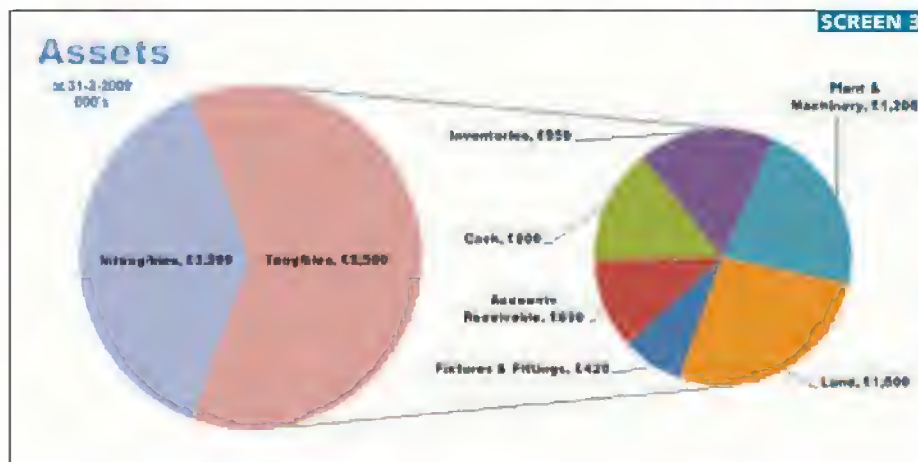
By right-clicking in turn on each horizontal axis you can now format them appropriately for currency on the left, and numbers of grams on the right. And you can format both axes for font, size and weight. Format the camcorder names in a fixed width font like Courier New. Lastly, add titles in text boxes.

The comparison chart clearly points up that, although overall the heavier camcorders tend to be the more expensive, between models there are visible inconsistencies. PCW

Enter the names of six camcorders in the range D2 to D7. Enter their weight in grams in B2:B7 and their price in C2:C7. In cell A2 enter:
`=A2&REPT(CHAR(160),ROUNDUP((12-LEN(A2))/2,0))`
(Key: < code string continues)

This will ensure that the names of the camcorders will be centred in the middle of the chart. Highlight the

Another way of charting a breakdown of company assets





Niall Magennis has been dabbling in Midi and digital audio since the days of the Atari ST. He writes for a number of music magazines and lives in London in a flat overrun with music equipment.

→ Comments welcome on the Sound column. It returns in the May issue. Email sound@pcw.co.uk. Please do not send unsolicited file attachments.

WMP 11 tips and tricks

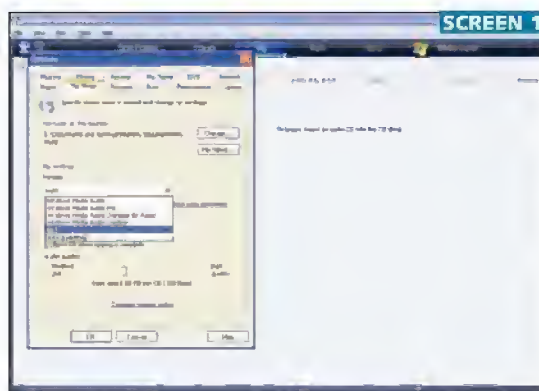
You don't have to put up with the aggravating quirks of Microsoft's media player

Windows Media Player (WMP) came in for a lot of stick when it was introduced in 2000 for its cluttered interface and all-round clumsy design. Over time things have improved greatly and, while there are still areas of WMP 11 that could do with a clean-up, most of us can now live with, if not quite love, its combination of features and foibles.

Even though it's a program that gets brought out on a daily basis, many people still don't know the best shortcuts to use, how to turn specific features on and off, and how to circumvent some of its more annoying quirks. In this column we're giving you a rundown of the top tips and tricks to tame the WMP 11 beast.

Many WMP 11 users are tripped up by its default setting for ripping music tracks. It's only when they try to transfer tracks to a portable music player that they discover WMP has ripped their music to Microsoft's WMA format rather than MP3.

To change this, just go to the Tools menu, select Options and then click on the Rip Music tab. Under the Rip Settings heading, change the format to MP3, and then push the audio quality



slider from 128 to 192Kbits/sec. It will increase the size of ripped files, but will also greatly boost the quality of the compressed audio (see screen 1).

This isn't the only problem that arises from Microsoft pushing its own formats. While WMP 11 makes it very easy to create a playlist – all you have to do is drag and drop tracks into the Now Playing pane (right-click on the Now Playing tab and select Show List Pane to view it) – it saves playlists in Microsoft's .wpl format by default.

This is fine if you're only going to use your playlists on your PC, but if you want to use them on a portable music player or music phone, the

format isn't generally recognised. It's best to use the most widely supported playlist format instead, which is .m3u.

To save a playlist in .m3u format, click on the Playlist button in the List pane and select Save Playlist As. In the File box that appears, change the setting in the Save As Type box from WPL to M3U. Problem solved.

Feature shift

When Microsoft upgraded WMP 10 to WMP 11, it flummoxed many users by removing the internet radio feature from the software. In reality, it hadn't done anything of the sort – all it did was remove the dedicated internet radio tab from the main interface and hide it in the Online Stores section.

To access it, right-click on the WMP 11 title bar, select View, then Online Stores and then Media Guide. Next click on the Radio link and select Radio Tuner. You may be asked to install an ActiveX applet: just click OK. Once the Radio Tuner appears you can browse stations by category or simply by performing a text search for them.

When you've got WMP 11 open you'll often want it to sit prominently in the foreground so you can have easy access to its controls. But by

Don't like WMA? Then set Windows Media Player to default to MP3

Assign command and control of WMP functions to shortcut icons

Windows Media Player can be controlled through command-line instructions. For example, you can instruct it to open on a specific tab, start up and play a specific playlist, or immediately copy tracks from a CD. These commands and more can be placed in a shortcut and activated simply by double-clicking on the shortcut icon.

To set up a command shortcut, right-click on the shortcut you use to launch WMP 11 and then select Properties. In the Target field, add the command to the end of the shortcut. For example, the shortcut probably currently reads C:\Program Files\Windows Media Player\wmplayer.exe. To start the player and play a playlist called TheKillers, you'd change this to C:\Program Files\Windows Media Player\wmplayer.exe /Playlist TheKillers.

Here's a list of the most useful command-line instructions for Windows Media Player:

Play an audio CD:	/device:audio CD
Open WMP in Now Playing screen:	/Task NowPlaying
Open WMP in Media Guide screen:	/Task MediaGuide
Open WMP in the Rip screen:	/Task CDAudio
Open WMP in the Burn screen:	/Task CDWrite
Open WMP in the Library screen:	/Task Library
Open WMP in Sync screen:	/Task PortableDevice
Open WMP and play the specified playlist:	/Playlist PlaylistName
Open WMP showing the specified media category:	/Schema:{Music\Pictures\Video\TV\Other}



default WMP 11 behaves like any other open window, and goes behind other windows when you click on them.

To change this, click on the Tools menu and select Options. In the window that appears, click on the Player tab, tick the box marked 'Keep the Player on top of other windows' and click OK. WMP 11 will now always be visible while open (see screen 2).

Quiet Mode and SRS

WMP 11 also has two features that are often overlooked or misunderstood: Quiet Mode and SRS Wow effects, both on the Enhancements menu. Quiet Mode is useful if you want to watch a video on your PC at night when you don't want to have to constantly turn the volume up and down as the sound rises during action scenes and falls during moments of quieter dialogue. Quiet Mode reduces the gap between loud and soft sounds so the volume level remains more even. To enable it, just click on Views, select Enhancements and then Quiet

WMP 11 can be instructed to stay on top of other windows

Mode. Click on the Turn On button and then choose between Medium Difference or Little Difference (the former is more aggressive in the way it equals out volume levels).

SRS effects, on the other hand, are useful for adding a bit more stereo width and bass to music when you're using smaller speakers, such as those built-in to a computer monitor.

To access SRS effects, click on Views, select Enhancements and then select SRS Wow Effects. Click the Turn On button to activate the effects and use the Speaker toggle to choose the type of speakers you are using.

The Trubass slider controls how much bass enhancement is added. With small speakers it's best not to go overboard, but just use a small amount of enhancement to add a bit of oomph to your music.

The Wow effect broadens the apparent stereo width of your music. It's best to set up the effect while you've got some music playing so you can hear in real time the changes it makes to your audio. Again, don't go overboard with it because too much can make your music sound overly processed. But a small amount of Wow really can make the audio from your speakers sound wider and more expansive (see screen 3).

Stuttering streams

If you've got a slow internet connection or are having one of those days where your broadband link seems to be pushing data through in fits and starts, then you'll find that streaming media tends to stutter as the connection struggles to keep pace with the required throughput. Sometimes you can get around the issue by upping WMP 11's buffer size. The buffer stores a small amount of data to compensate for breaks in the traffic stream, so if a connection is congested for one of two seconds and the buffer is set to four

Hotkeys in WMP

Keyboard shortcuts can speed up control of Windows Media Player 11 and can be especially useful if your keyboard doesn't have dedicated media keys.

Track control

Play/Pause:	Ctrl & P
Stop:	Ctrl & S
Skip to previous track:	Ctrl & B
Skip to next track:	Ctrl & F
Rewind:	Ctrl & Shift & B
Fast forward:	Ctrl & Shift & F
Repeat current track:	Ctrl & T

Playback speed

Fast:	Ctrl & Shift & G
Normal:	Ctrl & Shift & N
Slow:	Ctrl & Shift & S

Volume control

Louder:	F9
Softer:	F8
Mute:	F7

Views

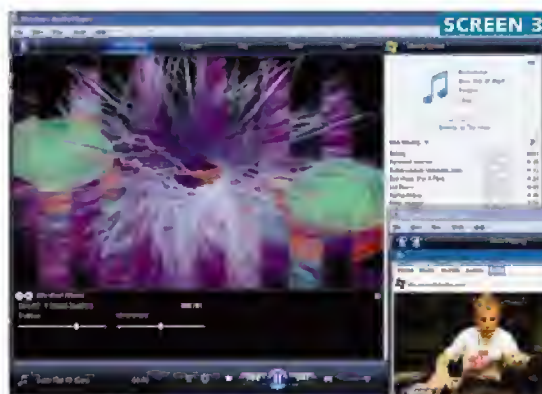
Full mode:	Ctrl & 1
Skin mode:	Ctrl & 2
Hide/Show menu bars:	Ctrl & M

seconds, you shouldn't notice any break in playback. Naturally, if the congestion lasts for more than four seconds, then the buffer will run dry and playback will stop.

To adjust the buffer in WMP 11, click on the Tools menu, select Options and then click on the Performance tab. Under the Network Buffering section, tick the Buffer radio button and enter a larger number than the default in the box.

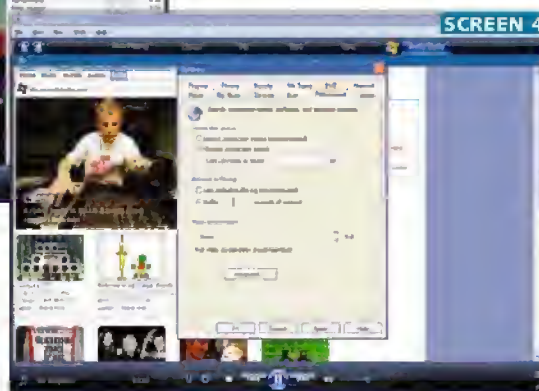
It's best to increase the buffer in small increments because it increases the amount of time WMP 11 has to wait before it starts playing a stream, and it makes slightly more use of disk space. But if you're having severe problems getting a clean audio stream from an internet site or radio station it's worth tinkering with the buffer setting to see if you can improve performance (see screen 4).

WMP 11 may not be the most straightforward or easiest to use media player around, but as it's built into Windows it's the one that gets used most. Armed with these tips and tricks you'll be able to get a bit more out of it and avoid some of its more annoying elements. **PCW**



Above: Careful use of the SRS Wow effect can make smaller speakers sound better

Right: Extending the buffer can improve performance





Alan Stevens has implemented and supported networks for over 25 years, working for IT vendors, system integrators and customers. He now mostly researches and writes about networking matters.

→ Comments welcome on the **Networks** column.
Email networks@pcw.co.uk
Please do not send unsolicited file attachments.

Synchronise your files

How Synctoy can keep all your PCs singing from the same hymn sheet

I often get emails asking whether it's possible to synchronise data that needs to be held on more than one PC. One such email comes from reader Paul Stoke, who writes: "I recently networked two PCs (one running XP Pro, the other XP Home). However, we don't leave the PCs on all the time and tend only to power up the most convenient (one's upstairs, one down). I've resorted to keeping two copies of some folders so that my wife can access her files from either."

"This leads to the problem of maintaining file synchronisation between the two machines. What I need is a simple program that will look at similar folders on both machines, check for identically named files and identify where there is a difference between them, then update the oldest version (plus copy across any newly created files). Ideally, I'd like it to be freeware. Any suggestions?"

One solution is to use a Windows utility from Microsoft called Synctoy. Available for free download, Synctoy is expressly designed to handle the situation that Paul describes. Synctoy can also synchronise the contents of any two folders whether on PCs, notebooks, servers or storage devices, and so can be used for other purposes, such as taking backups.

Getting Synctoy

First grab a copy of the Synctoy setup program from the Microsoft website (<http://snipurl.com/7r1ks>) and it's also on this month's cover disc. The latest v2 release is available for both 32-bit and 64-bit versions of Windows XP or Vista. It's not very big (the 32-bit version is just 4MB).

Installation takes just a couple of minutes; the setup program also installs the Microsoft Sync Framework needed to support the tool. However, the program only has to be installed



on one of the PCs you want to synchronise, although they do have to be networked together. That's because Synctoy works by synchronising the contents of any two folders, which can be on the same PC or network shares hosted by other systems on the Lan.

To make it clear what's going on, the two folders are called Left and Right, as in screen 1, which is what you see when Synctoy first starts. It may look like it wants to synchronise the My Pictures folder, but you can ignore that – it's just a suggestion.

Using Synctoy

In our example I've started Synctoy and clicked on Create New Folder Pair, using the wizard to browse to the folders I want to synchronise. For the Left folder I've selected my local My Documents folder; for the Right folder I've chosen one I've called Alansync, located on a remote network share (see screen 2). This share happens to be on a storage appliance but it could easily be on another Windows PC.

You then get three choices for how the contents of the folder should be

Synctoy can be used to synchronise the contents of any two folders, which are referred to as Left and Right

synchronised (see screen 3): Synchronize, Echo or Contribute.

Synchronize copies the new and updated files saved in either folder to the other. If files are renamed or deleted in a folder, those actions are likewise duplicated in both directions.

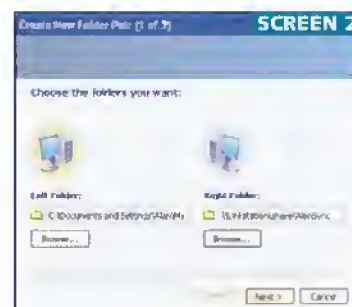
Echo is very similar to Synchronize except that new and updated files are copied in one direction only, from Left to Right. File renames and deletions made in the Left folder only are also replicated in the Right folder.

Contribute is the same as Echo except that file deletions are not replicated.

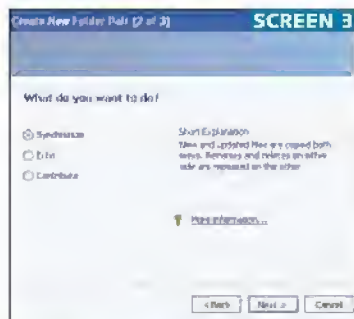
In Paul's case, the default option, Synchronize, is probably the best, as anything done on either of his PCs will then be replicated on the other.

Echo, meanwhile, is what you might use if you had a notebook and regularly picked up documents and files away from home or the office and needed to copy them to a desktop PC or network share on your return. You could also use Echo to keep a security backup of a folder.

Similarly, Contribute could be used to take backups and may be better than Echo in that files in the backup won't ever be deleted. Alternatively, you may have a USB memory key or Flash memory card you want to synchronise and don't want to duplicate deletions that you made just because you'd run out of space and

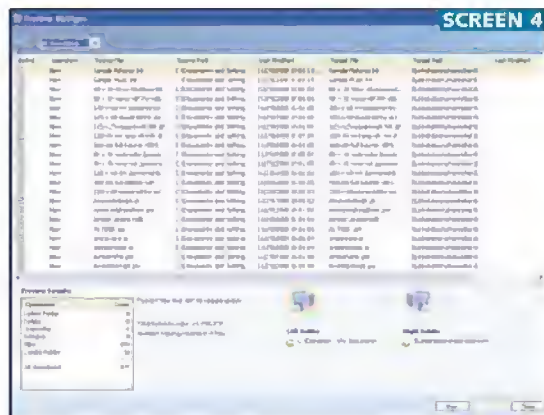


Synchronising the local My Documents folder with another on a network share



Left: There are three different ways in which the Left and Right folders can be synchronised

Below: Before running a synchronisation, you can preview the result



had to get rid of a few files. The files aren't deleted, just moved to the Recycle Bin from where they can be recovered – unless you empty it. However, you'll only ever find deleted files in the Recycle Bin of the PC running SyncToy, even if the folders being synchronised are on another PC or server altogether.

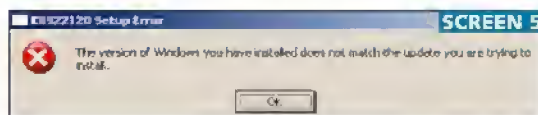
A number of other options are also available. For example, you can choose to include or exclude files using wildcard strings and screen out read-only, hidden and system files. You can also choose to keep the old version of any file that gets overwritten by a newer update, with the older file being saved in the Recycle Bin.

It's even possible to check the contents of files before they're synchronised. This can help to avoid problems where, for example, you have files with the same name, size and date in Left and Right folders, but whose contents are different.

Having set the options you want, you can then choose either to run the synchronisation job or preview it to see what the results would be without actually changing anything (see screen 4).

And that's really all there is to it. SyncToy simply gets on with the job of synchronising the folders you've specified whenever you want. Of course, you don't have to stick with

If you try to install the LLTD Responder on a Windows server you'll get this error



Edit the properties of the LLTD responder update program to fool it into thinking it's installing itself on an XP PC

just the one pair of folders. Multiple pairs can be configured, with each pair being assigned a unique name and replicated as and when required.

Scheduling SyncToy

Unfortunately, there's no facility to schedule synchronisation jobs in SyncToy, but that can be overcome using Windows Task Scheduler. Details of how to go about this in both Windows XP and Vista are to be found in the SyncToy helpfile, but in essence you need to schedule a separate command-line version of SyncToy (SyncToyCmd.exe) with an extra command string appended to it, in the form:

C:\Program Files\SyncToy 2.0\ SyncToyCmd.exe -R "Folder pair"
(Key: & code string continues)

'Folder pair' is the name of the folder pair you want to use. If not specified, all the folder pairs you've created will be synchronised.

LLTD responder

Another issue I came across the other day relates to installing the LLTD (Link Layer Topology Discovery) responder on Windows Server 2003 and Windows Home Server (WHS), which is based on the same OS.

The LLTD responder is a networking protocol that allows Windows PCs to be included in the graphical network maps that can be created by Windows Vista. It's built into Vista as standard and Windows Server 2008 but not older Windows versions although you can download a responder for Windows XP from <http://support.microsoft.com/kb/922120>.

Unfortunately, this update can only be installed on Windows XP and even then only the 32-bit version. If you try to run it on a Windows Server 2003 or WHS system you're told the operating system isn't supported (see screen 5). The way to get around this problem is by manually installing the update.

What you do is download the XP responder from the link above and start to install it on your server until you get the error message. At this point leave the error on the screen (don't click OK to dismiss it just yet) then have a look in drive C: for the temporary installation folder the setup program will have created. It'll have a fairly obvious and very long numeric name; on my test server it was called 1eb140ccbad506133270ccc5fce314, but it will be something else on yours.

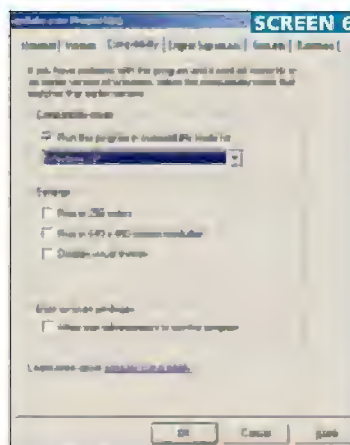
Copy all the files in this temporary folder to another of your own (one will be in use, so ignore it) then click on the OK button to dismiss the error message.

That done, open the folder and browse to the update.exe file, which you'll find in a sub-folder similarly called Update. Right-click and select Properties, then click on the Compatibility tab. Select the option marked 'Run this program in compatibility mode for', and alongside choose Windows XP. Click OK and you should now be able to run the update on your Windows Server as though it were an XP PC.

On a real Windows XP system, that's all you have to do, but on a server there's a little bit more. You'll also need to add LLTD as a protocol on the network interface, which you do by opening Control Panel, selecting Network Connections and opening the properties of the Local Area Connection or any other connection you want to modify.

From the General tab you next need to click on the Install button, select Protocol and click Add. From the Select Network Protocol window displayed, you should then click Have Disk, then browse to the folder to which you copied the XP responder package earlier. In this you should find a path to SP2GDR\ip, which contains a file called rspndr.inf. It's this you want, so select it and click OK.

You should then see the Link Layer Topology Discovery responder listed. Select it, click OK and you're done. Windows Server should now be correctly discovered and displayed in Vista network maps. **PCW**





Mark Whitehorn is one of those lost souls who actually likes databases. He splits his time between consultancy, writing, working for two universities and tinkering with old cars.

→ Comments welcome on the **Databases** column.

Email database@pcw.co.uk

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From Access to SQL Server

How upsizing can affect VB code in forms, and using Access to manipulate SQL Server

A couple of months ago, after demonstrating due diligence (that is, consulting the readership), I decided to take a look at connecting from Access to SQL Server.

There are essentially three choices.

First, you can use Access to connect to an existing SQL Server database. This allows you to use Access to build forms, run queries, and add and modify data but doesn't let you modify the data structure (add new tables and so on).

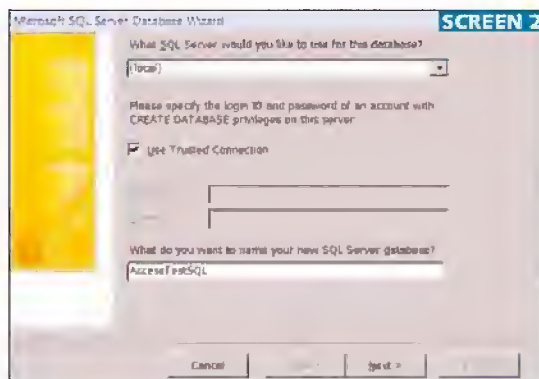
Second, you can upsize an existing Access database to a SQL Server database.

Or third, you can use Access to manipulate both the data and the data structure.

In the Christmas issue I looked at first option and since I'd already covered upsizing (the second option) extensively, I said that I didn't intend to go into much detail. However, Nigel Hick then wrote in and raised an important point: could upsizing an Access database to SQL Server 2005 affect the VB code in forms?

Upsizing issues

It is an excellent point. VB code may behave as before – and the simpler the code, the more chance it has of doing so – but even forms without code can exhibit a different behaviour when the database is upsized.



Here you identify your SQL Server installation

For example, both Access and SQL Server have a Yes/No field. Access allows only two values: Yes and No, with No as the default. SQL Server allows three: Yes/No/Null, and the default value is Null.

'VB code may behave as before, but even forms without code can exhibit a different behaviour when the database is upsized'

Now imagine an Access-based patient record system in a hospital. It has a form with a Yes/No field labelled 'Female'. If it contains a Yes, we assume the patient is female; if No, we assume male. The default in Access is No, so the administrators are used to entering a value only if the new patient is female.

The first problem is that when we upsize the default changes to Null, so we suddenly have a whole clutch of patients with no gender recorded.

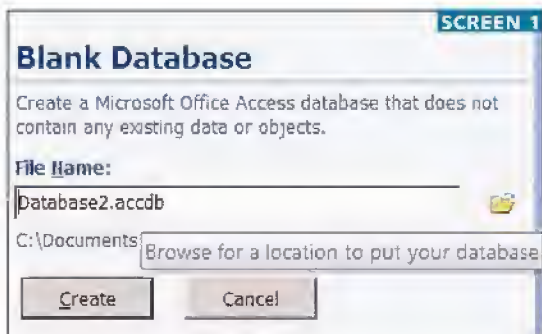
That's bad and VB can make it worse. Suppose we have some VB code that looks at the value in this field: if it finds a No, it allocates the patient to a male ward, otherwise it allocates the patient to a female ward.

This code was fine in the original version (assuming that female patients

were correctly entered), but now it's a recipe for disaster. If the administrators go on entering data in the same way as they are used to, everyone will be allocated to the female wards irrespective of gender.

It is worth noting that the problem has arisen here because the original code made assumptions about the range of values that are possible in a Yes/No field, specifically that if it wasn't No it had to be Yes. That was a reasonable assumption under Access but is not so under SQL Server. Developers should, of course, always write code that makes no assumptions about anything, but in practice this is almost impossible.

The bottom line is that you need to be very careful when upsizing from Access to SQL Server.



Browsing to a location to save your database also lets you make it a project file

Access project files

This month we'll take a look at using Access to manipulate both the data and structure in SQL Server (the third and final option) and use an Access project file to do so. As a general rule you will need a version of Access that is more recent than the version of SQL Server; here I'll use Access 2007 and SQL Server 2005. Older Access versions will happily connect to younger SQL Server versions to manipulate the data but the combination of Access 2003 and SQL Server 2005 that I used in the Christmas issue won't work now we want to create a new data structure.

Fire up Access and select New Blank Database. In the right-hand pane a default filename is shown with the .accdb extension for a normal database file. We want a project file so,

with sublime disregard for intuitive use, you click on the tiny folder icon to the right ('Browse for a location to put your database', see screen 1).

In the File New Database window you can change the filename if you wish (I'm using AccessTest) and choose a project file by popping down the list of file types, selecting Microsoft Office Access Projects (*.adp) and clicking OK. Back on the Getting Started screen, click Create. When you're asked whether you want to connect to an existing SQL Server database, answer No.

A dialogue opens asking 'What SQL Server would you like to use for this database?' (see screen 2). It wants the name of the server to which you want to connect. You can use the server name or type:

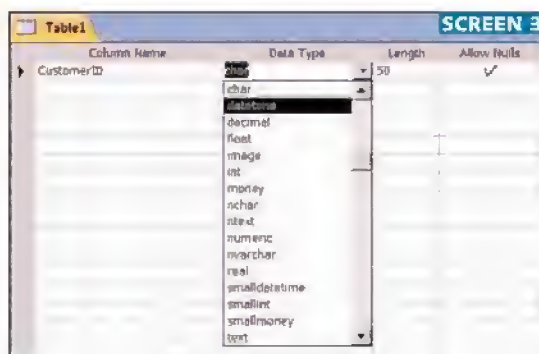
(local)

if the server is on the same machine at which you are typing (but see below for more on this).

The letters SQL have been added to the filename you specified. Click Next and then Finish in the final dialogue. A progress bar is displayed while the project is created.

You're now in Access with everything looking normal, except for the word 'Project' in the header at the top of the ribbon. But differences will start to appear as you work, so create a new Customer table. Enter a column name – CustomerID – and move on to setting its data type. The list of available types is much longer than the usual Access one, with many unfamiliar entries (see screen 3). It's the first real indication we are using Access as a window into SQL Server.

Differences continue to appear: the CustomerID column is to be the primary key column in this table, but if you click the Primary Key button an

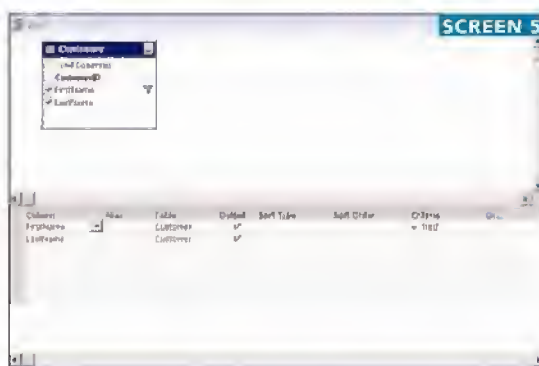


error message appears, saying 'Primary key cannot be created on column 'CustomerID' because it allows null values'. Sure enough, the Allow Nulls column in the table design view has been checked automatically. Why? Because that's the default in SQL Server. You have to deselect the Allow Nulls setting before you can make the column a primary key column.

Add a few more columns to the table, name it and save it; mine is called Customer and has CustomerID, FirstName and LastName columns, all of data type char (short for 'character'; I'll look at data types in more detail in a future column). You have just created a table in SQL Server. Add a few records to it and then we'll see

The list of data types in SQL Server is much longer than in Access

The design view of designing a view



how it looks in SQL Server itself.

Fire up SQL Server and in the navigation pane look in Databases to find AccessTestSQL. Under Tables you should see an object called dbo.Customer. It's your new SQL Server table: right-click on it, select Open Table and there it is, records and all.

Querying in SQL Server

One area where further differences are apparent is in querying. Access stores queries locally; SQL Server stores them on the server as views.

Let's build a simple view. Return to Access and click the Query Wizard on the Create tab. The New Query window displays six types of query, none of them familiar. 'Design View' (remembering that 'view' is SQL Server-speak for query) is the easiest place to start. Select it and a query builder opens that's not too dissimilar to the one in Access except that the columns and row in the query grid are switched around. Add the tables you wish to use, here our Customer table. We'll look for all customers called Fred, so click the check boxes alongside FirstName and LastName in the Customer table to include these columns in the query grid. In the Criteria column for FirstName, type: =fred

It will be automatically tidied to: = 'fred'

Then Save the view (see screen 5), click the View or Run button and Fred Smith will be located.

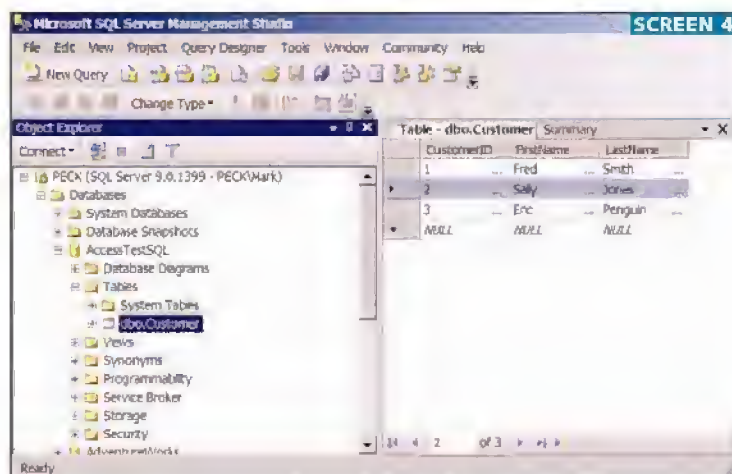
(Local) difficulty

Frank Kavanagh emailed, having met some resistance when using '(local)' to name the server. Frank reported that using '(local)' didn't work using SQLExpress and after experimenting with different configurations he tried 'ComputerName/SQLExpress' instead of '(local)' and it worked. He said: "I am using Access 2003 and SQL Server 2005 and I know there are different local machine settings that affect these things and it is not practical to go into them all, so I don't know why it worked but it did."

I don't know why it worked either, but it's certainly worth trying if (local) gives you grief.

End note

Mark Whitehorn has written this column for the past 15 years and great fun it's been too. The best bits are available in a book: visit www.penguinsoft.co.uk for details. PCW



How your first SQL Server table looks from within SQL Server itself



Tim Anderson is an IT journalist and software developer, and began writing for PCW in 1993. Since his first Commodore Pet, he has acquired expertise in Rad programming, Windows and the Internet.

→ Comments welcome on the Visual programming column.
Email visual@pcw.co.uk
Please do not send unsolicited file attachments.

Mesh takes Silverlight offline

Silverlight plus Live Mesh brings the Microsoft cloud to the desktop

Late last year, Microsoft unveiled various pieces of its cloud computing strategy under the overall name Windows Azure.

One of those pieces is the Live Framework, which combines with Silverlight to create a category of applications that blur the boundaries between web and desktop. What follows is a hands-on example with some interesting features.

The application runs either in the browser (see screen 1) or on the desktop (see screen 2). It makes no difference where it runs; it has access to the same data and services.

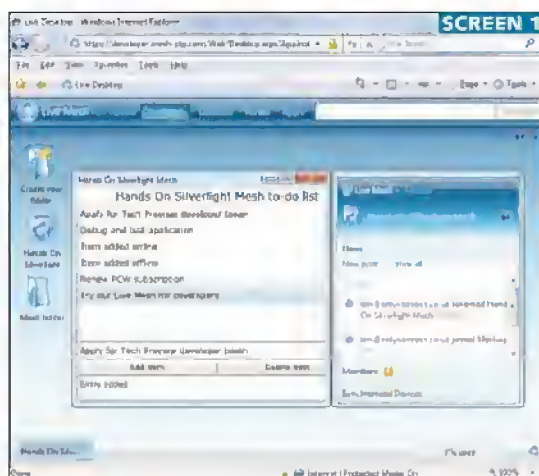
It runs online and offline. Within reason, it works the same. Data modified offline is automatically synchronised when next connected.

If the application is updated, all instances on all computers are automatically updated.

It should run on the Mac as well as Windows, and maybe on Linux one day, although in our tests even the Mac version failed.

When running on the desktop, it uses the Silverlight runtime, rather like the way AIR (Adobe Integrated Runtime) uses Flash for desktop apps.

All this is promising, but it is early days for Microsoft's effort. The current Live Framework CTP (Community Tech Preview) is buggy and under-



Running the Hands On example in the preview Mesh desktop within a browser

documented. Getting some of the information means sitting through online videos or trawling forums. Access requires a developer token – issued in limited numbers – so consider this a peek into the possible future of Windows cloud applications, rather than something useful now.

Getting started

This example is based on a Live Framework CTP, so the details are subject to change, but it gives a good idea of what's involved. The starting point is to sign up for the developer preview of Live Mesh, which is at <http://developer.mesh-ctp.com>.

If Microsoft allows, you will get a developer token that lets you create apps. Next, you need several pieces installed, in this order: Visual Studio 2008 with the Silverlight 2.0 SDK; the Live Framework SDK (a ZIP file which you need to expand into your Program Files\Microsoft SDKs folder); a setup file called LiveFrameworkTools.msi (a separate download), which modifies Visual Studio to enable Mesh projects; and the Live Framework Client, which you will need if you want to try out desktop applications.

This Live Framework Client is an updated version of the existing Live Mesh that you may have played with. When first released, Live Mesh did little more than synchronise files. This new version supports applications as well. Unfortunately, you cannot have the two side by side, and they do not work against the same data. This might mean using a spare or virtual PC for development. You do not have to use Silverlight for Mesh applications – there are a variety of other options including plain web applications – but it is a particularly interesting possibility.

Starting a new project

A new Mesh project does not just live in Visual Studio, it also has to be uploaded to Microsoft's servers. This involves visiting the Developer Portal website and starting a new Live Framework project there (see screen 3). Once created, the website invites you to upload a package. This does not yet exist, so it is time to fire up Visual Studio, choose File, New Project, and select a Visual Basic, Live Framework, Silverlight Mesh-enabled application.

This wizard creates a Hello World Silverlight application, but when you hit debug you will see a difference. Instead of running it in a web page, Visual Studio displays a dialogue telling you to upload a ZIP package to the Developer Portal.

Click the shortcut to copy the path to the package, then go to the project page, click Browse to upload a package, paste in the path, and upload it. Refresh the page, and in the Web Site Embedding section you will see a URL called Application Self Link. Copy this URL, which represents the online location of the new app, back into the Visual Studio dialogue and click OK. Visual Studio will now update the online version whenever you debug.



The same application runs as a desktop application, even though it is Silverlight, which normally requires a web page

Writing the application

The application is like any other Silverlight app except that it has access to Mesh services. At heart, Mesh data lives in collections of objects usually published as RSS-like Atom feeds. The Live Framework SDK includes .Net libraries that wrap these feeds in convenient .Net classes. However, they are in a standard format, so in principle you can code Mesh apps as Javascript browser apps, or as Java, Actionscript for Flash, or native Windows applications.

This simple to-do list app (see screen 4) needs a data feed with text entries. The code-behind file for the Silverlight page declares a global variable representing this feed. In the MeshAppLoaded event, it tries to retrieve a reference to PCWListFeed, and if it fails, it creates it. Here is the code for creating the feed:

```
Dim meshApp As   
MeshApplicationService =   
Application.Current.  
GetMeshApplicationService()  
meshApp.DataFeeds.Add(New   
DataFeed("PCWListFeed"))
```

(Key: ↵ code string continues)

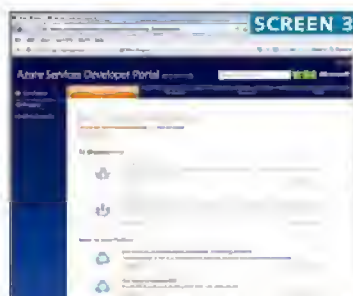
Once created, the following code retrieves a reference to the feed using Linq (Language Integrated Query) and stores it in the df global variable:

```
Dim meshApp As   
MeshApplicationService =   
Application.Current.  
GetMeshApplicationService()  
df = (From dataFeed In meshApp.  
CreateQuery(Of DataFeed)() _  
Where dataFeed.Resource.Title   
= "PCWListFeed" _  
Select dataFeed).FirstOrDefault
```

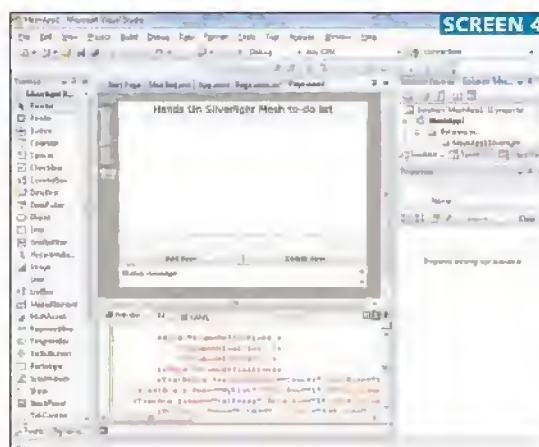
A Mesh application object also represents a MeshObject, which has a collection of feeds, with each feed containing any number of items. The code creates a feed dedicated to storing items for our to-do list.

The Silverlight user interface has a listbox, a textbox, two buttons, and a label for status messages, all defined in XAML. The following code adds an item to the to-do list:

```
Private Sub AddListItem(ByVal   
ItemName As String)  
Try  
If Not IsNothing(df) Then  
df.DataEntries.Add(New   
DataEntry(ItemName))  
df.Update()  
Me.lbMessage.Text = "Entry   
added"  
End If  
Catch e As Exception
```



The Azure developer portal, where you create new projects and manage their deployment



Working on the Mesh Silverlight application in Visual Studio

```
Me.lbMessage.Text = e.Message  
If Not   
IsNothing(e.InnerException) Then  
Me.lbMessage.Text = e.Message  
End If  
End Try  
End Sub
```

Catching every kind of exception can be a useful debugging exercise. The rest of the code is also straightforward. Here is how to update the listbox:

```
Me.MyList.Items.Clear()  
For Each de As DataEntry In   
df.DataEntries.Entries  
Me.MyList.Items.Add(  
(de.ToString())  
Next
```

```
And this code deletes an item:  
For Each de As DataEntry In   
df.DataEntries.Entries  
If de.ToString = ItemName Then  
df.DataEntries.Remove(de)  
df.Update()  
Exit For  
End If  
Next
```

Deploying the application

Uploading the ZIP package which Visual Studio builds deploys the to-do list to Mesh. Next time anyone with access to that application runs it, they get the updated version. Visual Studio does this automatically whenever you debug, although this is a debug build.

So how would someone access the app? The new Mesh desktop has an Apps section with an Add Applications link. Clicking the link takes you to a catalogue of applications you can add to your Mesh. Adding an app also adds a desktop shortcut to a machine with the local Mesh client installed.

On the publisher side, the app's visibility is controlled by the Developer Portal, which has a Publish button.

Hands On with Mesh

Creating this simple Silverlight Mesh app was a mixed experience. Settling up for the CTP is fiddly, and Microsoft makes it harder than it needs to be with a labyrinth of websites, a confusing token system, and a lack of clear developer-focused documentation.

There are also some puzzles. The idea of Mesh is that you can work offline and have everything auto-synchronise when you reconnect. There is provision for resolving conflicts. When I pulled out the network cable, ran the app from the desktop, and modified the list, the app raised an exception, although it also successfully updated the list and synchronised it later.

Microsoft is supporting Mesh with an ambitious set of services, including authentication, contacts, calendars, image handling and mapping. In principle this should be suitable for social apps as well as being useful in the Enterprise when hooked up to Active Directory. The offline story is great, as is the ability to run within the browser or on the desktop.

But the key question is whether the complexity of the Mesh infrastructure, whose reliability under stress is unknown, is a price worth paying for these additional features. Synchronisation is a great thing when you need it, but in some cases an old-style web or Java application will do just as well.

The Live Framework client, needed for offline use, is a big deployment burden, and more intrusive and less smooth than something like the Flash or Silverlight browser plug-in.

There is promise, but Microsoft has a lot of work to do before its cloud computing approach will really appeal.

Resources

Live Framework home page:
<http://dev.live.com/liveframework> PCW

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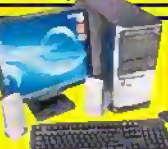
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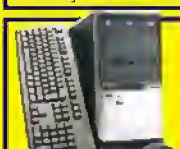
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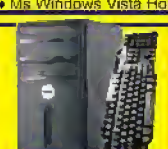
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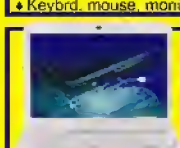
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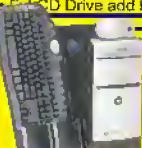
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And to help you get up and running, the prize even includes a matching USB WLAN adapter for your PC. The Fritz WLAN USB stick N includes automatic configuration – just plug it into your Fritzbox to retrieve the correct security settings, and then into your PC, for completely automatic high-security wireless setup – there's no need for driver CDs or fiddly control panels.

On top of all that, there's sophisticated Voice over IP (VoIP) functionality built in, with two sockets to plug in your existing analogue handsets, and a link to your existing phone line for emergency calls, or calling when the broadband is down.

But there's far more to the Fritzbox than that – you can use it as a home telephone system, calling between phones, or plug it into an ISDN line. There's even a Dect base-station built in, which can support up to six handsets, each of which can have their own VoIP number, too, so everyone in your home can have their own phone line.

There's a built-in answering machine, and you can arrange for faxes to be turned into emails automatically, while the USB 2.0 port allows you to share music via UPnP, or to plug in a printer and share it with all the computers on your network.

We've got three of these amazing routers to give away as first prizes, each with a Fritz WLAN USB stick N to help you make the most of the wireless. Three runners-up will each receive



Each Fritzbox 7270 comes with a WLAN USB stick N

a Fritzbox Fon WLAN 7170, which includes 802.11g wireless, USB 1.1 port for printer and hard drive sharing, and a built-in VoIP PBX with two analogue phone connections.

For more on the Fritzbox range, visit www.fritzbox.co.uk.

For your chance to win, answer the question below and enter online at www.pcw.co.uk/competitions. The competition opens on 22 January and closes on 20 February 2009.

How many Dect handsets can you link to the Fritzbox 7270?

- a) 4
- b) 8
- c) 6

This competition is open to readers of *PCW*, except for employees (and their families) of Incisive Media, and AVM. *PCW* is the sole judge of the competition and the Editor's choice is final. Offer applies to residents of the UK and the Irish Republic only. Entrants must be over the age of 18 and only one entry per household will be accepted. Winners will be selected at random from all correct entries received. No cash alternative is available in lieu of prizes. Incisive Media will use all reasonable endeavours to notify the winner(s) within 14 days of the close of the competition. Incisive Media reserves the right to substitute the prize for one of greater or equal value if circumstances make this unavoidable. Prizes will be dispatched by the competition sponsor(s) and the winner(s) name(s) and address(es) will be provided to the competition sponsor(s) for this purpose. No purchase of the magazine is necessary to enter the competition. Incisive Media will use all reasonable efforts to ensure that the prizes are as described on this page. However, Incisive Media cannot accept any liability in respect of any prize, and any queries regarding a prize should be taken up directly with the sponsor of that prize.

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10 tips for buying safely

- 1 Get written quotes from shops specifying components used, or print off and keep spec sheets from websites.
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- 3 Keep good records, storing receipts, correspondence in one place.
- 4 In England and Wales, the onus is on retailers to prove that faults found within six months on purchases are not inherent.
- 5 Goods ordered online, by phone or post can be returned under the Distance Selling Regulations without explanation within a reasonable time – this is widely accepted as being seven days.
- 6 Open and inspect all goods as soon as possible after delivery and make sure they work.
- 7 Companies are not obliged to repair or replace goods damaged by accident or misuse, unless it is caused in transit by a delivery service.
- 8 Companies cannot charge for a service that isn't being delivered, but never stop a direct debit while under contract.
- 9 Consumers should not suffer financial loss for repairs that are not their fault, so claim back carriage charges.
- 10 If a dispute arises, take advice from Consumer Direct at www.consumerdirect.gov.uk.



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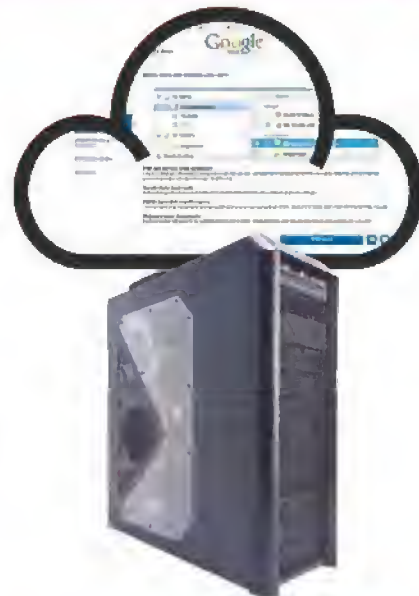
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Office in the clouds

With small laptops, fast mobile internet and better browsers, is the time finally right for online applications? We put the best online office suites to the test, and find out if they really are a practical alternative to running software on your own PC.

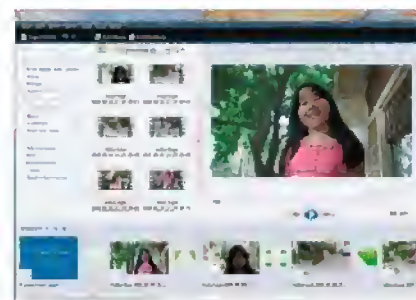


Ultimate PC cases

For overclockers, serious gamers, or just the discerning DIY system builder, a good-quality PC case is essential – and all too often overlooked. We've looked at some of the latest and greatest models to find out which is the best for building your perfect PC.

Free movie editing

Windows Movie Maker is free with many versions of Windows, but surely it's just a basic tool for novices who don't need to make complicated edits? Wrong. As we'll show you, with a few tweaks and add-ons it's capable of some pretty impressive video editing tricks.



Browser wars

There used to be a choice of only a couple of web browsers, but now there are at least half a dozen in regular use, including Google's interesting new Chrome. But what are the differences between them? Read next month's feature to find out and why might you want to change from the one you're using.



**There's lots more in April's PCW
DON'T MISS IT...**

MARCH 2004

From the archives: Take a look at the important events in technology five, 15 and 25 years ago.

Our review of 10 'ultraportable' notebooks shows how much standards have changed in the past five years. Some weighed upwards of 1.2kg. Even more significantly, none cost less than £1,000 and many were closer to £2,000. It was never quite clear why small notebooks cost more than large ones but you can see why the cheap and light Asus Eee PC, for all its flaws, caused such a sensation when it was launched four years later.

We announced the passing of Pagemaker, the first professional desktop-publishing program. Launched by Aldus in 1985 for the Mac, it was a success until it was outperformed by Quark. Adobe bought Aldus in 1994 and killed off Pagemaker to make way for InDesign.



Colour laser printers were still far more expensive than inkjets but prices were hitting levels small offices could afford. We tested machines costing between £450 and £859, and warned that the cost of consumables could not be ignored – the familiar caveat for anyone buying a printer. Konica Minolta's Magicolour 2300W got our Editor's Choice for its low-cost quality.

Digital SLR prices were still high so that a model costing less than £1,000 was cause for comment. Our reviewer Ken McMahon remarked that the Canon EOS 300D, costing £830 with an 18-55mm (35mm equivalent) zoom, was what amateur photographers had been waiting for. It got a rare five-star award.

MARCH 1984

The first Apple Mac featured in our March 1984 cover. We were impressed with its processing power but felt that the interface and its associated icons were far too 'whimsical'. But we also predicted that Apple was one of the few companies with a chance of taking on the IBM PC/Microsoft platform and winning.

The PC was still using the text-based MS-Dos operating system and would not go graphical successfully for some years. The delay was quite

sensible as processors were not yet fast enough to support a GUI.

Guy Kewney in our Newsprint section was unimpressed by the Consumer Electronics Show in Las Vegas. Vendors had little of interest to showcase and tried to outdo their competitors with loud music and bizarre gadgets of little use.

Finally we took a look at some of the latest football prediction applications aimed at people doing the pools. We realised the technology had a long way to go when one product predicted that a result would be either a draw, a home win or an away win.



MARCH 1994

Doom doomed the usually diligent PCW staff to wasting their time trying to kill each other – though happily only in the virtual world. Our Chip Chat column reported that the game was also responsible for bringing down a rival magazine's server. And this was just the start of the Doom phenomenon.

We looked at Sigma Delta's Reelmagic MPEG decoder card (a bargain at £395) and predicted the impact the format would have on PCs. MPEG had the

effect of letting games developers make pap like Dragon's Layer. Play Doom, we recommended.

We took a look at crime, still in the amateur phase when hackers could be described as 'pale individuals aged between 17 and 25' and compared to 'the Dungeons and Dragons freak'. Sadly today's hacking mafias could do with being thrown to the dungeons and dragons.

We showcased the room-sized Indigo E-print and asked: "Is this the form the printer of the future will take?" Er, no, actually... Even PCW gets things wrong.



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